



# 44CD42M

## 100 lb. Shipboard Steam Heated **Laundry Dryer** SERVICE MANUAL

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\* INSTALLATION      \* SERVICE      \* PARTS      \* MAINTENANCE

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**PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SHIPS SYSTEM COMMAND**

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**NSN: 3G3510-01-414-8819**

**IMPORTANT NOTICES—PLEASE READ**

For optimum efficiency and safety, we recommend that you read the Manual before operating the equipment. Store this manual in a file or binder and keep for future reference.



**WARNING:** For your safety, the information in this manual must be followed to minimize the risk of fire or explosion or to prevent property damage, personal injury, or loss of life.

- Do not store or use gasoline or other flammable liquids or vapors in the vicinity of this or any other appliance.
- WHAT TO DO IF YOU SMELL GAS
  - Do not try to light any appliances.
  - Do not touch any electrical switch; do not use any phone in your building.
  - Clear the room, building, or area of all occupants.
  - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
  - If you cannot reach the gas supplier, call the fire department.

Installation and service must be performed by a qualified installer, service agency or the gas supplier.



**WARNING:** In the event the user smells gas odor, instructions on what to do must be posted in a prominent location. This information can be obtained from the local gas supplier.



**WARNING:** Wear Safety Shoes to prevent injuries.



**WARNING:** Purchaser must post the following notice in a prominent location:

**FOR YOUR SAFETY**

**Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.**



**WARNING:** A clothes dryer produces combustible lint and should be exhausted outside the building. The dryer and the area around the dryer should be kept free of lint.



**WARNING:** Be safe, before servicing machine, the main power should be shut off.



**WARNING:** To avoid fire hazard, do not dry articles containing foam rubber or similar texture materials. Do not put into this dryer flammable items such as baby bed mattresses, throw rugs, undergarments (brassieres, etc.) and other items which use rubber as padding or backing. Rubber easily oxidizes causing excessive heat and possible fire. These items should be air dried.



**WARNING:** Synthetic solvent fumes from drycleaning machines create acids when drawn through the dryer. These fumes cause rusting of painted parts, pitting of bright or plated parts, and completely removes the zinc from galvanized parts, such as the tumbler basket. If drycleaning machines are in the same area as the tumbler, the tumbler's make-up air must come from a source free of solvent fumes.



**WARNING:** Do not operate without guards in place.



**WARNING:** Check the lint trap often and clean as needed but at least a minimum of once per day.



**WARNING:** Alterations to equipment may not be carried out without consulting with the factory and only by a qualified engineer or technician. Only **Cissell** parts may be used.



**WARNING:** Remove clothes from dryer as soon as it stops. This keeps wrinkles from setting in and reduces the possibility of spontaneous combustion.



**WARNING:** Be Safe - shut main electrical power and gas supply off externally before attempting service.



**WARNING:** Never use drycleaning solvents, gasoline, kerosene, or other flammable liquids in the dryer. ***FIRE AND EXPLOSION WILL OCCUR. NEVER PUT FABRICS TREATED WITH THESE LIQUIDS INTO THE DRYER. NEVER USE THESE LIQUIDS NEAR THE DRYER..***



**WARNING:** Never let children play near or operate the dryer. Serious injury could occur if a child should crawl inside and the dryer is turned on.



**WARNING:** Never tumble fiberglass materials in the dryer unless the labels say they are machine dryable. Glass fibers break and can remain in the dryer. These fibers cause skin irritation if they become mixed with other fabrics.



**WARNING:** Before operating gas ignition system - purge air from Natural Gas or Propane Gas Lines per manufacturer's instructions..

## **CISSELL DRYER WARRANTY**

The Cissell Manufacturing Company (Cissell) warrants all new equipment (and the original parts thereof) to be free from defects in material or workmanship for a period of two (2) years from the date of sale thereof to an original purchaser for use, except as hereinafter provided. With respect to non-durable parts normally requiring replacement in less than two (2) years due to normal wear and tear, and with respect to all new repair or replacement parts for Cissell equipment for which the two (2) year warranty period has expired, or for all new repair or replacement parts for equipment other than Cissell equipment, the warranty period is limited to ninety (90) days from date of sale. The warranty period on each new replacement part furnished by Cissell in fulfillment of the warranty on new equipment or parts shall be for the unexpired portion of the original warranty period on the part replaced.

With respect to electric motors, coin meters and other accessories furnished with the new equipment, but not manufactured by Cissell, the warranty is limited to that provided by the respective manufacturer.

Cissell's total liability arising out of the manufacture and sale of new equipment and parts, whether under the warranty or caused by Cissell's negligence or otherwise, shall be limited to Cissell repairing or replacing, at its option, any defective equipment or part returned f.o.b. Cissell's factory, transportation prepaid, within the applicable warranty period and found by Cissell to have been defective, and in no event shall Cissell be liable for damages of any kind, whether for any injury to persons or property or for any special or consequential damages. The liability of Cissell does not include furnishing (or paying for) any labor such as that required to service, remove or install; to diagnose troubles; to adjust, remove or replace defective equipment or a part; nor does it include any responsibility for transportation expense which is involved therein.

The warranty of Cissell is contingent upon installation and use of its equipment under normal operating conditions. The warranty is void on equipment or parts; that have been subjected to misuse, accident, or negligent damage; operated under loads, pressures, speeds, electrical connections, plumbing, or conditions other than those specified by Cissell; operated or repaired with other than genuine Cissell replacement parts; damaged by fire, flood, vandalism, or such other causes beyond the control of Cissell; altered or repaired in any way that effects the reliability or detracts from its performance, or; which have had the identification plate, or serial number, altered, defaced, or removed.

No defective equipment or part may be returned to Cissell for repair or replacement without prior written authorization from Cissell. Charges for unauthorized repairs will not be accepted or paid by Cissell.

CISSELL MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY, STATUTORY OR OTHERWISE, CONCERNING THE EQUIPMENT OR PARTS INCLUDING, WITHOUT LIMITATION, A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, OR A WARRANTY OF MERCHANTABILITY. THE WARRANTIES GIVEN ABOVE ARE EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. CISSELL NEITHER ASSUMES, NOR AUTHORIZES ANY PERSON TO ASSUME FOR IT, ANY OTHER WARRANTY OR LIABILITY IN CONNECTION WITH THE MANUFACTURE, USE OR SALE OF ITS EQUIPMENT OR PARTS.

For warranty service, contact the Distributor from whom the Cissell equipment or part was purchased. If the Distributor cannot be reached, contact Cissell.

### **IDENTIFICATION NAMEPLATE**

The Identification Nameplate is located on the rear wall of the dryer. It contains the dryer serial number, product number, model number, electrical specifications and other important data that may be needed when servicing and ordering parts, wiring diagrams, etc. Do not remove this nameplate.


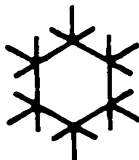
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## *100 LB. LAUNDRY DRYER*



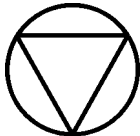

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## SYMBOLS

The following symbols are used in this manual and/or on the machine. The numbers between ( ) refer to the numbers on the machine surveys.

Symbol	Description	Part/Measurement
	<b>NOTE!</b>	
	<b>Hot! Do Not Touch</b> <b>Heiß! Nicht Berühren</b> <b>Haute temperature! Ne pas toucher</b> <b>Caliente! no tocar</b>	
	<b>dangerous voltage</b> <b>tension dangereuse</b> <b>Gefährliche elektrische</b> <b>Spannung</b> <b>tension peligrosa</b>	
	<b>on</b> <b>marche</b> <b>Ein</b> <b>conectado</b>	
	<b>off</b> <b>arrêt</b> <b>Aus</b> <b>desconectado</b>	
	<b>start</b> <b>demarrage</b> <b>Start</b> <b>arranque de un movimiento</b>	
	<b>emission of heat in general</b> <b>émission de chaleur en</b> <b>general</b> <b>Warmeabgabe allgemein</b> <b>emisión de calor</b>	
	<b>cooling</b> <b>refroidissement</b> <b>Kühlen</b> <b>enfriamiento</b>	

## SYMBOLS

Symbol	Description	Part/Measurement
	<p>rotation in two directions  rotation dans les deux sens  Drehbewegung in zwei Richtungen  movimiento rotativo en los dos sentidos</p>	
	<p>direction of rotation  sens de mouvement continu de rotation  Drehbewegung in Pfeilrichtung  movimiento giratorio o rotatorio en el sentido de la flecha</p>	
	End of Cycle	
	<p>caution  attention  Achtung  atencion; precaucion</p>	

# CAUTION

**PER PUBLIC LAW 91-596:**

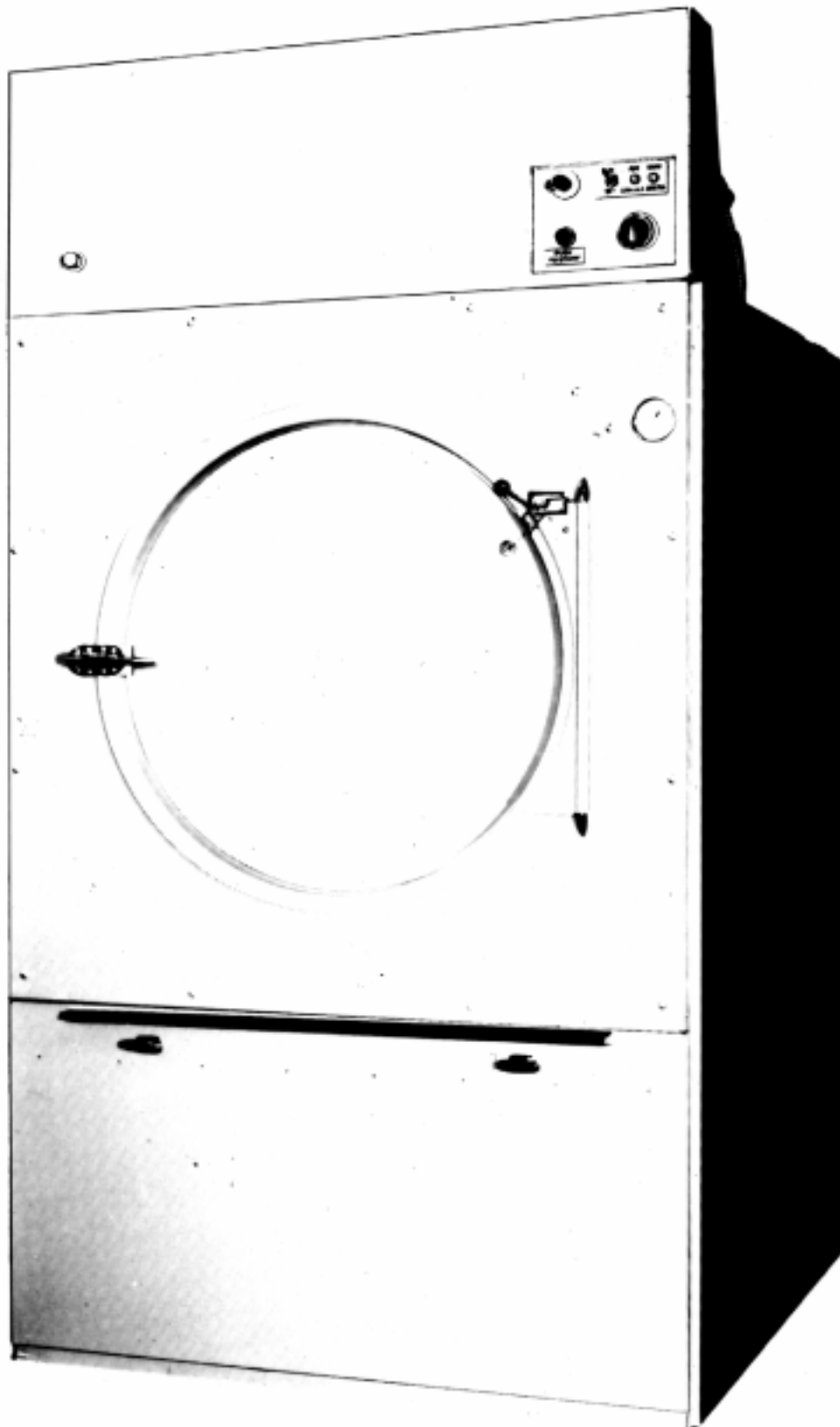
THE FOLLOWING LABELS ARE AFFIXED TO THE FRONT OR REAR OF ALL 44CD42M MACHINES;

- A - TU3476 AIR SWITCH WARNING
- B - D1A GROUND CONNECTION
- C - TU10706 ROTATION - FAN
- D - TU10701 BACK-DRAFT DAMPER
- E - TU7855 WARNING - CAUTION
- F - TU3475 EXHAUST DUCT WARNING
- G - TU12811 CISSELL LOGO
- H - TU7858 CLEAN LINT COMPARTMENT
- I - TU9279 CHECK OIL LEVEL
- J - TU6618 GOVERNMENT RATING PLATE
- K - F1116 RATING PLATE
- L - TU8013 CISSELL LOGO

**EXECUTIVE ORDER 12196:**

EXECUTIVE ORDER 12196 EXEMPTS MILITARY PERSONNEL FROM COMPLIANCE WITH PUBLIC LAW 91-596

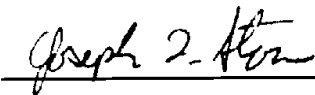
# FRONT VIEW



# REAR VIEW



# 100 Lbs. GOVERNMENT DRYER TEST RESULTS

<p>DRYING EFFICIENCY (3.6.1)</p> <p>DRY CLOTHES WEIGHT Lb. <u>110</u></p> <p>WET CLOTHES WEIGHT Lb. <u>165</u></p> <p>DRY TIME (97% DRY) Min. <u>28</u></p> <p>WATER REMOVAL Lb. <u>53</u></p> <p>REMOVAL RATE Lbs/Min <u>1.89</u></p> <p>MACHINE VOLTAGE Volts <u>440</u></p> <p>STEAM PRESSURE PSI <u>100</u></p>	<p>SATURATED STEAM (3.6.6)</p> <p>NO LEAKAGE <u>PASS</u></p> <p>SAFETY (3.9)</p> <p>EXHAUST TEMPERATURE</p> <p>BLOWER MOTOR FAIL <u>180° F</u></p> <p>DRUM MOTOR FAIL <u>180° F</u></p> <p>AIRFLOW RESTRICTED <u>180° F</u></p> <p>ELECTRIC MOTORS (3.6.10)</p>
<p>REVERSING (3.6.2)</p> <p>REVERSALS/MINUTE <u>3</u></p>	<p>MOTOR AMPS      FAN      BASKET</p> <p>RATING                      <u>2.9</u>      <u>1.9</u></p>
<p>SHIPBOARD POWER (3.6.4)</p> <p>STEADY STATE VOLTAGE <u>PASS</u></p> <p>POWER INTERRUPTION (4) <u>PASS</u></p> <p>LEAKAGE CURRENT <u>PASS</u></p> <p>POWER FACTOR              0.95 <u>PASS</u></p> <p>LOAD IMBALANCE            0.05 <u>PASS</u></p> <p>DIELECTRIC STRENGTH <u>PASS</u></p>	<p><u>MEASUREMENTS</u>    <u>2.53</u>    <u>1.09</u></p> <p>   <u>2.20</u>    <u>0.92</u></p> <p>   <u>2.40</u>    <u>1.18</u></p> <p><u>AVERAGE</u>                      <u>2.38</u>    <u>1.06</u></p>
<p>OPERATIONAL TESTING (4.5.3.1)</p> <p>MANUAL TEMP SELECTION</p> <p>   AT 185° F              180 F</p> <p>   AT 155° F              <u>148 F</u></p> <p>COOLDOWN PHASE OPERATION</p> <p>   AT 135° F              <u>139 F</u></p>	<p><b>CISSELL MANUFACTURING CO.</b></p> <p><b>TEST WITNESSED BY:</b></p> <p><b>JOE STONE</b></p> <p></p> <p><b>SIGNATURE</b></p> <p>DATE: 10/27/92.</p>

## INTRODUCTION

44CD42M is a laundry tumbler/dryer designed for drying garments and intended primarily for shipboard use.

44CD42M is capable of drying up to 110 pounds (dry weight) of garments.

See page 11 for performance characteristics.

Specifications are on page 15.

Operating steam pressure should be 125 P.S.I. maximum and power should be 440 volts, 60 cycles, 3 phase.

A normal complement of wrenches and screw drivers plus a volt meter are needed for regular maintenance and testing.

Preparation for use and installation.

The construction of Cissell cabinet dryers permits installation side by side to save space. The dryer should be positioned for use of the least amount of exhaust ducting and elbows, and to allow free access to the rear of the dryer for ease of maintenance and repair. A good supply of intake "make-up" air, preferably from the out-of-doors, is needed, i.e., 4 to 6 times the area of the exhaust duct. The 44CD42M machine requires a minimum of 3-1/4" square feet of intake "make-up" air. The "make-up" air source should be as close to the machine as possible. If the machine is located too far from the "make-up" air source, it may be necessary to add a booster fan to keep the efficiency of the dryer up to specification. Similarly, the exhaust may require a booster fan. If the ducting is too long or there are too many elbows in the system.

Ideally, the end of the exhaust duct would face down so that wind, rain, snow and sleet would not be allowed entry and would not flow down into the dryer. For multiple dryers with a single exhaust duct, refer to page 15 for increasing duct diameters to maintain efficiency.

The area selected for the dryer should be clean and level. If studs are to be used for holding down the machine, they should be placed first. Pilot holes should be drilled if bolts or screws are to be used.

During uncrating, care should be exercised so that panels and exhaust duct flanges are not dented or bent. The basket door should be opened and closed a few times to check for any closure problems. The corrugated paper blocks between the basket and the front panel and loose material such as the manual should then be removed. Remove any tape which may be used to secure dryer parts during shipment, and read all instruction tags and instruction manuals.

The uncrated dryer should be placed in position and leveled, then the dryer can be screwed or bolted in place. The steam supply line and the electrical lines can be connected.

## **PRINCIPLES OF OPERATION**

A dryer is an air pump which draws “make-up” air from the out-of-doors, through the heater, pulls the heated air through the garments and then forces the air through the exhaust duct, back to the out-of-doors.

### **OPERATION**

1. Open door until safety latch (which holds door open), is engaged.
2. Insert garments to be dried.
3. Release safety latch and close door.
4. Turn rotary knob to select drying time - one to sixty minutes.
5. Turn rotary knob to select temperature - high or low.
6. Flip toggle switch to “On” position.
7. Push “On” button to start drying cycle.
8. If door is opened during drying cycle, to restart, close door and push “On” button. Dryer will run out remaining time.

### **CONTROLS**

In the upper right control panel. There are two rotary knobs, a push button, a toggle switch and two lights. The first rotary knob controls the length of time the dryer will run. The second knob sets the temperature that the dryer will maintain through the drying cycle. The toggle switch turns the power on. The push button starts the drying cycle, the right light indicates that the dryer is in the drying cycle. The left light indicates that the steam has been shut off and the fan is drawing cold air through the dryer. Dryer will continue in cool down cycle until basket temperature reaches approximately 135° F.

Below the control panel, there is a temperature gauge. At the low temperature setting, it should read between 145° and 165°. The high setting should yield a reading between 175° and 195°.

At the upper left, there is a reset button. If the dryer shuts down spontaneously, the reset button can be pushed in to attempt a restart. (If either motor fails, an overload condition may exist and a restart should be attempted).

### **MOVING AND STORAGE**

If the dryer must be moved, the oil-level inspection cup should be plugged with a cork or all the oil should be drained from the gear reducer by removing the drain plug located at the bottom rear of the gear reducer case. With the oil drained, the drain plug should be reinserted. A small screw should be placed in the vent tube. Corrugated paper spacers (4) should be inserted (equally spaced) between the tumbler and the sweep sheet at the front of the dryer.

When storing the dryer, fluids should be drained, a loosely fitting dust cover draped over the dryer and it should be kept in a cool, dry place.

## **WARNINGS**

Do not adjust the door handle latch for more than 5 pounds of opening force. Door must be openable from inside tumbler with no use of no more than 5 pounds of force without using the exterior door handle.

Do not store or use gasoline or other flammable vapors or liquids in the vicinity of the dryer.

High voltage. This dryer contains high voltage. Disconnect the power before servicing.

## **CAUTION**

The lint trap screen must be in place on the lint trap. Lint can accumulate in the exhaust ducting, leading to a fire hazard if a lint screen is not used. Lint accumulating in the exhaust duct can also lead to a loss in efficiency.

## **NOTE**

Lint should be removed daily or more often if necessary to insure proper efficiency of the dryer. If the air flow is restricted because of excessive lint on the lint trap, the air switch may trip, causing steam to the coils to shut off, in turn causing loss of heat for drying. The dryer will not begin heating again until air can flow freely, which then allows the air switch to close the circuit.

The dryer and the exhaust ducting should be cleaned of lint periodically (every 6 months minimum is recommended).

## **SAFETY PRECAUTIONS**

When connecting the 440 volt line to the machine, caution must be exercised. Power to the incoming line should be turned off. The grounding wire should be connected first. The power lines can then be connected and the exterior armor cover should be securely attached to the power disconnect box.

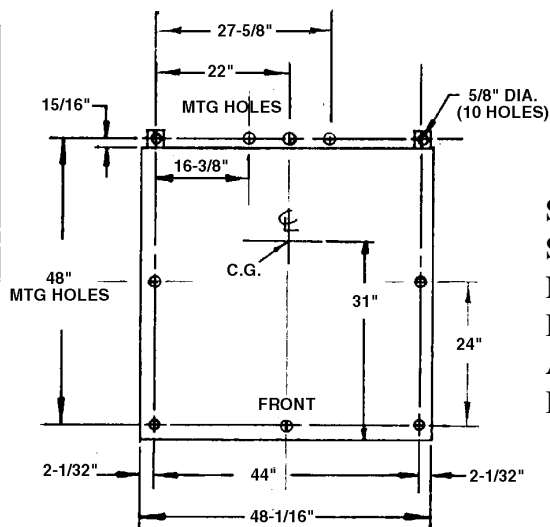
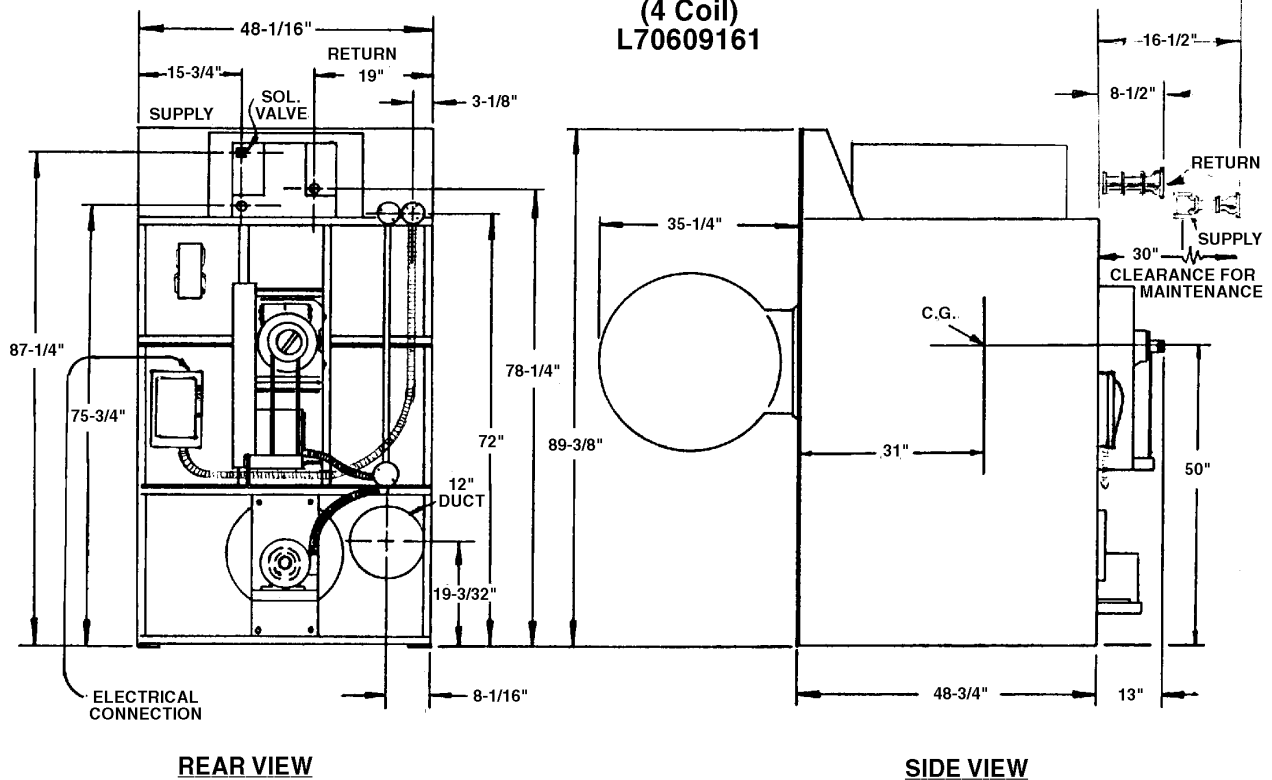
Steam line connections should be double checked for tightness in the joints. Steam can then be gradually allowed to enter the system, while the system is monitored for leaks.

## SPECIFICATIONS

### For 100-pound Cissell Steam-Heated Laundry Dryers

Floor Space.....	64" Deep x 49" Wide x 89-3/8" High
Door .....	33-3/8" Diameter
Basket .....	44" Dia. x 42" Deep
Basket Capacity (Dry Weight) .....	Approx. 110 pounds
Basket Motor .....	1 H.P.
Fan Motor.....	1-1/2 H.P.
Basket R.P.M.: Reversing.....	2.8 - 3.2 reversals per minute
Exhaust Duct.....	12" Dia.
Max. Air Displacement .....	2160 cu. ft. per min.
Recommended Operating Range.....	1700 - 2000 cfm
Net Weight (Approx.).....	1490 lbs.
Domestic Shipping Weight, .....	1985 lbs.
1 crate (Approx.)	
Export Shipping Weight, .....	2200 lbs.
1 box (Approx.)	
Export Shipping Dimensions .....	97" L x 53" W x 78" H
Export Crating .....	232.7 cu. ft.
Operating Steam Pressure .....	125 p.s.i. max.
Boiler H.P. (w/normal load).....	8.3
Heat Capacity .....	4-Coil
Steam Coils .....	(2) 40-1/2" L x 6" W x 10-1/4" H
Traps for Steam-Heating Coils .....	(2) 3/4"
Steam Supply Line.....	1"
Steam Return Line.....	1"
Electrical Specifications .....	440/60/3 with 110/60/1 Control Circuit

**44CD42M  
(4 Coil)  
L70609161**



**STEAM SUPPLY (screwed connection) 1"**  
**STEAM RETURN (screwed connection) 1"**  
**NET WEIGHT 1490 lbs.**  
**ELECTRICAL 440, 60 cy. 3 ph.**  
**AMPS 5**  
**BOILER H.P. 8.3**

## GENERAL INSTALLATION INSTRUCTIONS

Before initial start-up, remove the small screw from the vent tube at the top rear of the gear reducer case. Remove the cork from the oil level inspection cup. If the oil level is correct, the oil level inspection cup will be half filled with oil. If not, add oil. Oil may be added to the gear reducer by removing the filler plug in the top rear of the gear reducer case. **DO NOT** operate a gear reducer unless the drain plug is tight and the vent tube screw is removed.

Check the tightness of the V-belts at the rear of the dryer before starting.

Before approving the duct installation, put each dryer into operation. Progressively open each dryer door. Manually trip door switch and see that air is drawn into the basket door opening as freely as it is when all the other dryers are off.

Keep the exhaust ducts clean. **DO NOT** install wire mesh or screen in the discharge opening of the duct, since lint will build up and prevent proper discharge of air from the dryers.

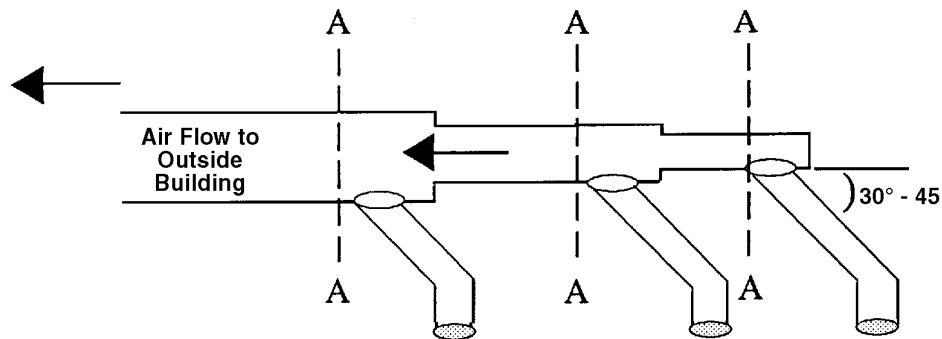
## ELECTRICAL CONNECTIONS

**DRYERS MUST BE ELECTRICALLY GROUNDED** by a separate **14 GA** or larger wire from the grounding terminal within the service disconnect box. In all cases, the grounding method must comply with standard shipboard procedures.

See the wiring diagram furnished with the dryer. A Cissell dryer is completely wired at the factory and it is only necessary for the electrician to connect the power leads to the wire connectors within the service disconnect box at the rear of the dryer. **DO NOT** change wiring without consulting the factory as you may void the factory warranty. **DO NOT** connect the dryer to any voltage or current other than that specified on the tags placed on the power leads of the dryer.

## EXHAUST INSTALLATION—MULTIPLE MANIFOLD DUCT

For Exhaust Duct less than 14 feet and 2 elbows equivalent and less than 0.3 inches static pressure.



### DRYER EXHAUSTS

Area of section "A-A" must be equal to the sum of dryer exhaust pipes entering multiple exhaust pipe. (See chart below.)

**MODELS:** L28FD30, L28US30, L36FD30, L36UR30, L36CD36, L44FD42

No. of Dryers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Duct Diameter (in inches)	6	9	11	12	14	15	16	17	18	19	20	21	22	23	23	24	25	26	26	27	28	28	29	30
(in cm)	15	23	27	30	35	38	41	43	46	48	51	53	56	58	58	61	63	66	66	68	71	71	73	76

**MODELS:** L28CD30, L28UR30, L36CD30, L36UR30, L36CD36, L44FD42

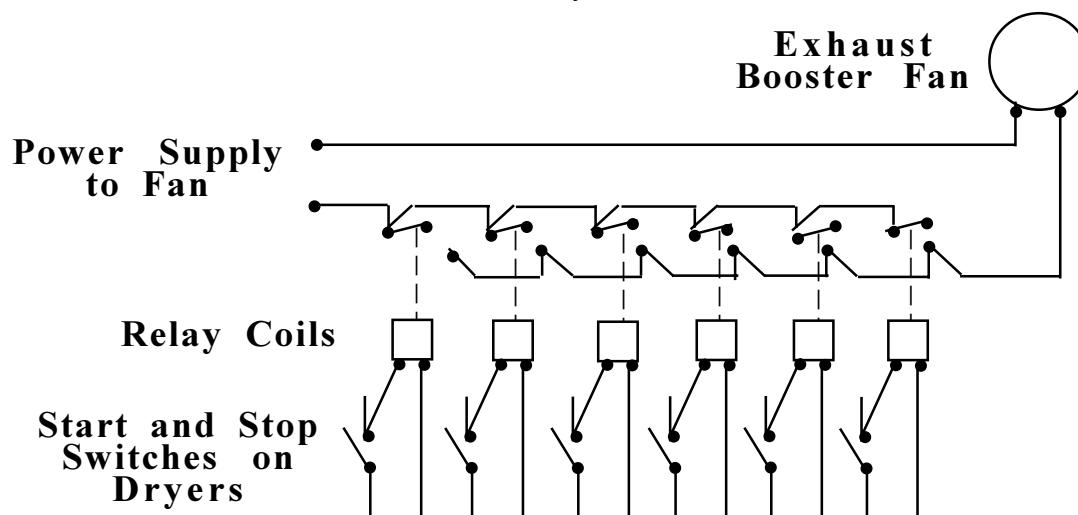
No. of Dryers	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Duct Diameter (in inches)	8	12	14	16	18	20	22	23	24	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
(in cm)	20	30	25	41	46	51	56	58	61	66	68	71	73	76	78	81	84	86	89	91	94	97	99	100

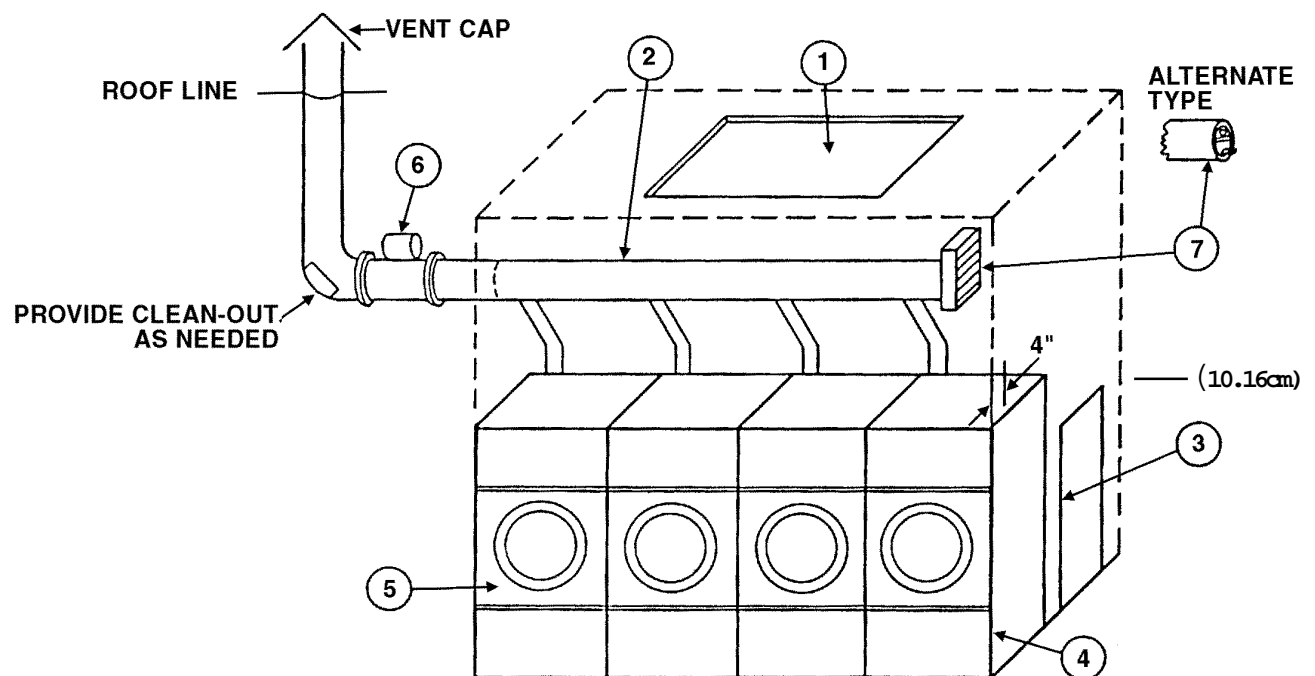
**MODELS:** L44CD42, L50CD42

No. of Dryers	1	2	3	4	5	6	7	8	9	10	11	12
Duct Diameter (in inches)	12	17	21	24	27	30	32	34	36	38	40	42
(in cm)	30	43	53	61	68	76	81	86	91	97	100	106

## AUTOMATIC ELECTRICAL CONTROL FOR EXHAUST FAN

For one or more dryers to start fan.



**DRYER INSTALLATION WITH MULTIPLE EXHAUST (ILLUSTRATION)**

## DRYER INSTALLATION WITH MULTIPLE EXHAUST

**For Exhaust Duct more than 14 feet and 2 elbows equivalent and more than 0.3 inches static pressure.**

1. Make-up air from outside building may enter enclosure from top or side walls. Area of opening should be equal to 4-6 times the sum of dryer duct areas. Provide 1 sq. ft. for each 6 in. diameter; 2 sq. ft. for each 8 in. diameter; and 4 sq. ft. for each 12 in. diameter.

2. Use constant diameter duct with area equal to the sum of dryer duct areas.

**EXAMPLE:** 6-8 in. diameter duct = 1-19.6 in. diameter duct in area. Use 20 in. diameter duct or diameter to match tube-axial fan.

3. Enclosure (plenum) with service door. This separates the dryer air from room comfort air. If dryers use room air instead of outside air, the heat loss can be another 25 BTU/HR for each cubic foot per minute (CFM) used.

**EXAMPLE:** 110 lb. dryer, 2000 CFM = 50,000 BTU/HR loss.

4. Zero inches clearance to combustible material allowed on sides and at points within 4 inches of front on top.
5. Heat loss into laundry room from dryer fronts *only* is about 60 BTU/HR per square foot.
6. Flange mounted, belt driven tube-axial fan. **Fan must run when one or more dryers are running.** See *suggested Automatic Electrical Control Wiring Diagram on page 23*. Must meet local electrical codes. Fan air flow (CFM) is equal to sum of dryer air flows, but static pressure (SP) is dependent on length of pipe and number of elbows.
7. **Barometric Bypass Damper**—Adjust to *closed flutter position* with all dryers and exhaust fan running. **Must be located within enclosure.**

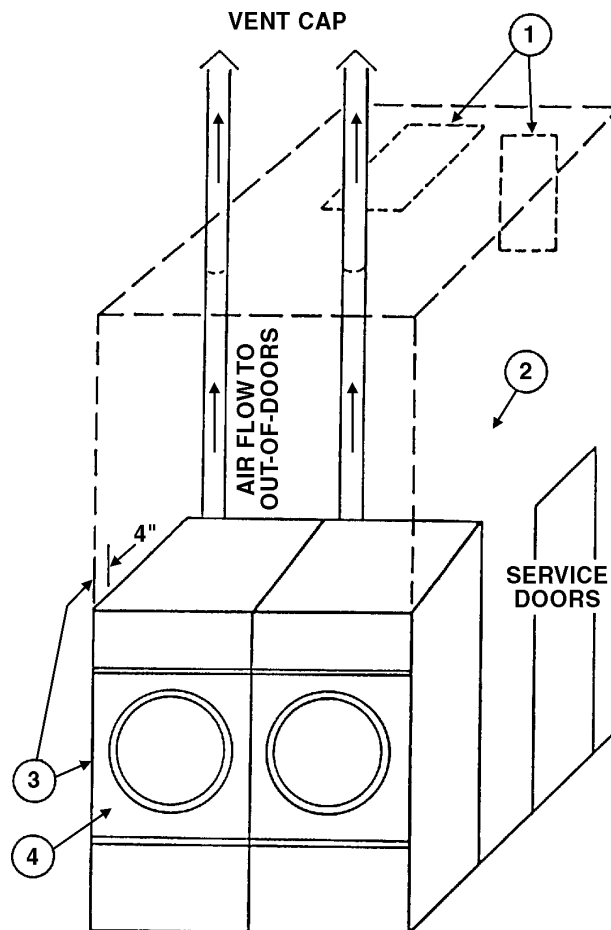
### CAUTION

***Never install hot water heaters or other gas appliances in the same room as dryers. Never install cooling exhaust fans in the same room as dryers.***

### CAUTION

**Never exhaust dryers with other types of equipment.**

## DRYER INSTALLATION WITH SEPARATE EXHAUST (PREFERRED)



## DRYER INSTALLATION WITH SEPARATE EXHAUST (PREFERRED)

For Exhaust Duct less than 14 feet and 2 elbows equivalent and less than 0.3 inches static pressure.

**NEVER** exhaust the dryer into a chimney.

**NEVER** install wire mesh screen over the exhaust or make-up air area.

**NEVER** exhaust into a wall, ceiling, or concealed space.

1. Make-up air opening from outside the building may enter the enclosure from the top or side walls. Area of opening should be equal to 4-6 times the sum of dryer duct areas. Provide 1 sq. ft. for each 6 in. diameter; 2 sq. ft. for each 8 in. diameter; and 4 sq. ft. for each 12 in. diameter.
2. Enclosure (plenum) with service door. This separates the dryer air from the room comfort air. If dryers use room air instead of outside air, the heat loss can be another 25 BTU/HR for each cubic foot per minute (CFM) used.  
**EXAMPLE:** A 110 lb. dryer with 2000 CFM = heat loss of 50,000 BTU/HR.
3. Zero inches clearance to combustible material allowed on sides and at points within 4 inches of front on top.
4. Heat loss into laundry room from dryer fronts *only* is about 60 BTU/HR per square foot.

## DRYER AIR FLOW INSTALLATION

Nothing is more important than air flow for the proper operation of a clothes dryer. A dryer is a pump which draws make-up air from the out-of-doors, through the heater, through the clothes and then forces the air through the exhaust duct back to the out-of-doors. Just as in a fluid water pump, there must be a fluid air flow to the inlet of the dryer, if there is to be the proper fluid air flow out of the exhaust duct.

In summary, there must be the proper size out-of-doors inlet air opening (4-6 times the combined areas of the air outlet) and an exhaust duct, size and length of which allows flow through the dryer with no more than 0.3 inches water column static pressure in the exhaust duct.

In some instances, special fans are required to supply make-up air, and/or boost exhaust fans are required for both regular and energy saving models.

### FOR BEST DRYING:

1. Exhaust duct maximum length 14 feet of straight duct and maximum of two 90° bends.
2. Use 45° and 30° elbows wherever possible.
3. **Exhaust each dryer separately.**
4. **Do not** install wire mesh or other restrictions in the exhaust duct.
5. Use clean-outs in the exhaust duct and clean periodically when needed.
6. **Never** exceed 0.3 inches water column static pressure in the exhaust duct.
7. Inside surface of the duct **must be smooth.**
8. Recommend pop rivets for duct assembly.

### FOR BEST DRYING:

1. Provide opening to the out-of-doors in accordance with the following:  
*For each dryer—*  
 8 inches diameter exhaust requires 2 square feet make-up air.  
 12 inches diameter exhaust requires 4 square feet make-up air.
2. Use barometric shutters in the inlet air opening to control air when dryers are not running.

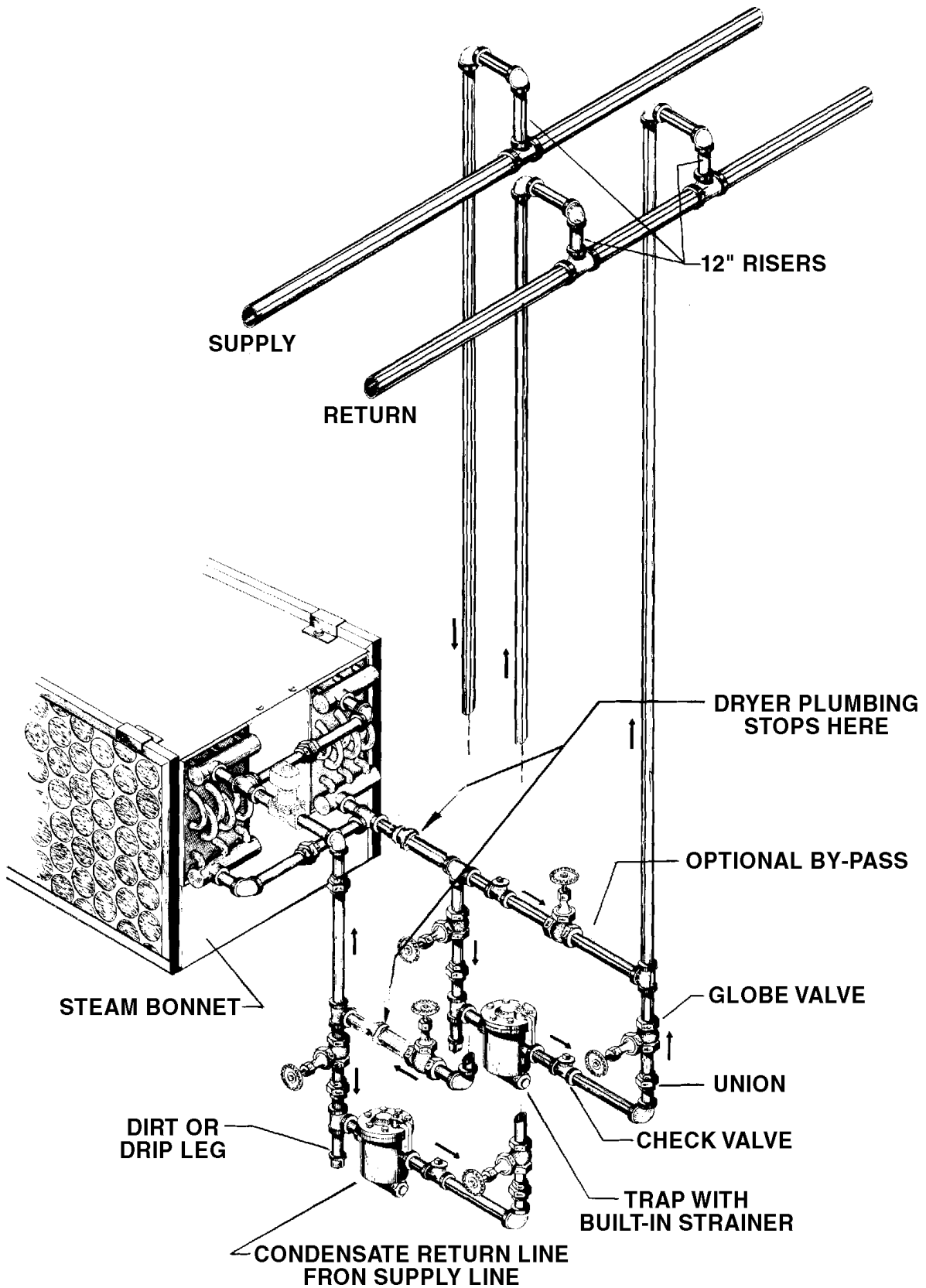
### Other Recommendations

To assure compliance, consult local building code requirements.

### Troubleshooting

Hot dryer surfaces, scorched clothes, slow drying, lint accumulations, or air switch malfunction are indicators of exhaust duct and/or make-up air problems.

## INSTALLATION ILLUSTRATION



## **INSTRUCTIONS FOR STEAM CONNECTIONS**

**IMPORTANT:   INSTALL STEAM PIPING IN ACCORDANCE WITH ALL  
LOCAL REGULATIONS AND REQUIREMENTS**

### **SEE PIPING ILLUSTRATION**

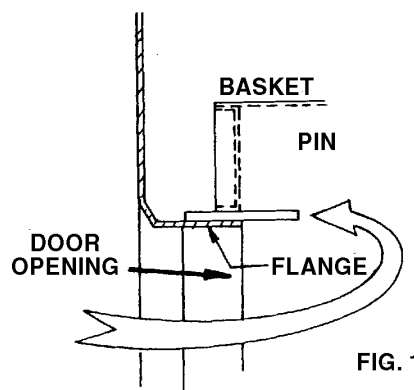
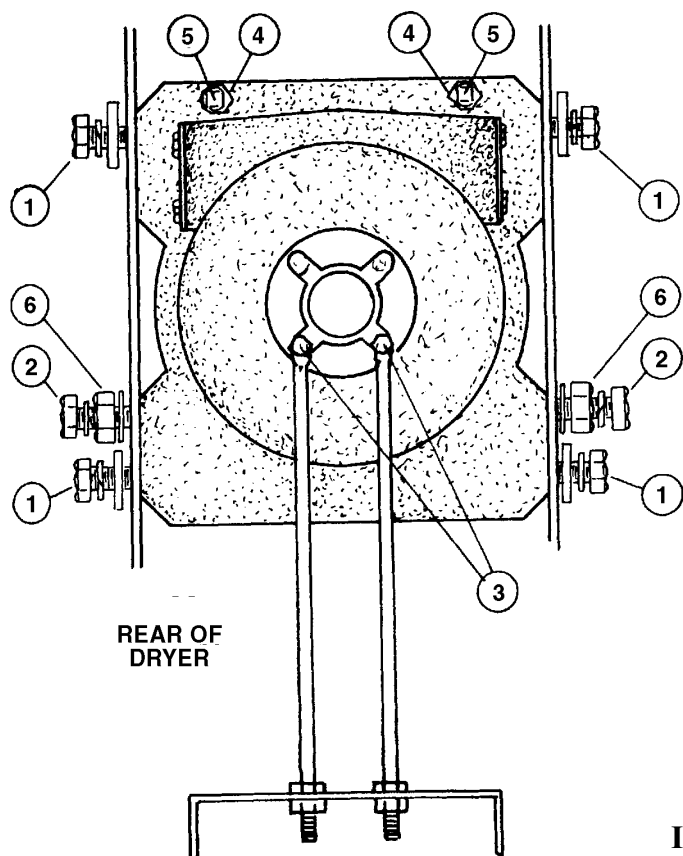
1. Set and anchor dryer in position. Machine should be level to assure proper steam circulation.
2. To prevent condensate draining from headers to dryer, piping should have a minimum riser 12" above each respective header as illustrated. Do not make steam connection to header with a horizontal or downwardly facing tee or elbow.
3. Whenever possible, horizontal runs of steam lines must drain, by gravity, to respective steam header. Water pockets, or an improperly drained steam header will provide wet steam, causing improper operation of dryer. If water pockets or improper drainage cannot be eliminated, install a by-pass trap to drain condensate from the low point in the steam supply header to the return.
4. In the steam supply line, a gate valve and a condensate return line is recommended. See steam piping illustration.
5. In the steam return line, a Globe valve, check valve, trap with built-in strainer and unions are recommended. If a by-pass line is installed, add two Globe valves and one check valve as illustrated. If steam is gravity-returned to boiler, omit trap but install check valve in return line near dryer.
6. Whenever possible, flush out any dirt or scale from dryer and pipe lines before installing traps and check valves. This will assure proper operation of trap when installed.
7. For successful operation of dryer, install trap 18" below coil and as near to dryer as possible. Inspect trap and check valve carefully for inlet and outlet marking and install according to manufacturers instructions.

### **STEAM PIPING RECOMMENDATIONS**

1. Trap each dryer individually. Always keep the trap clean and in good working condition.
2. When dryer is on the end of a line of equipment extend headers at least 4 ft. beyond dryer. Install globe valve, union, check valve and by-pass trap at end of line. If gravity-return to boiler, omit trap.
3. Insulate steam supply and return lines as required to ensure that the exposed surface of the insulation does not exceed 125° F.
4. Keep dryer in good working condition. Repair or replace any worn or defective parts.

## GENERAL MAINTENANCE

1. CLEAN LINT TRAP DAILY: Remove lint before starting day's operation. A clean lint trap will increase the efficiency of the dryer, as the moisture laden air will be exhausted to the atmosphere more quickly.
2. KEEP BASKET AND SWEEP SHEETS CLEAN: Check periodically and clean as often as required. The basket and sweep sheets within the dryer are easily accessible for cleaning by removing the front panel of the dryer. Take screws out of front panel, then lift panel off.
3. PULLEYS (SHEAVE) AND BELT: Keep belts clean. Oil and dirt will shorten the useful life of a belt. Never allow a belt to run against the belt guard. Check belts periodically for alignment. Pulley shafts must be parallel and the grooves must be in alignment. To align pulley, loosen set screw and slide pulley in or out to align up with the other pulley. Tighten set screw securely.
4. ELECTRIC MOTORS: Keep motors clean and dry. Occasionally blow dust out of winding. Relubricate blower motor once every two (2) years. Relubricate basket motor once every year. DO NOT OVER LUBRICATE. (Use Navy Symbol 2110)
5. GEAR REDUCER: Maintain oil level in gear reducer 1/2" depth of oil cup. Transmission oil to meet Military Specification MIL-L-6086B.
6. STEAM-HEATED DRYERS: Keep steam coils clean. Check periodically and clean as often as required. Remove lint and dirt accumulation from coil fins periodically, as dirty lint laden coil fins decrease the efficiency of steam-heated dryer.



### INSTRUCTIONS FOR ALIGNING BASKETS ON CISSELL 44 42 DRYERS

1. Loosen bolts bumbers one (1) thru five (5).
2. Place pin "A" in position shown in Fig. 1 & 2.
3. Check pins "B" at position shown in Fig. 1 & 2 for equal clearance.
4. If pin "B" clearance is unequal, adjust at nut #6.
5. When clearance at pin "B" is correct, tighten bolts #1 in the following order, as viewed from rear of dryer, top right, bottom left, top left and bottom right.
6. Tighten bolts #5 until flush against back of dryer. Tighten lock nut #4 to secure bolt #5 in position.
7. Tighten bolts #2 and #3.
8. Remove pin "A" and check for proper clearance at points "A" and "B". If clearance is incorrect, repeat the above steps.

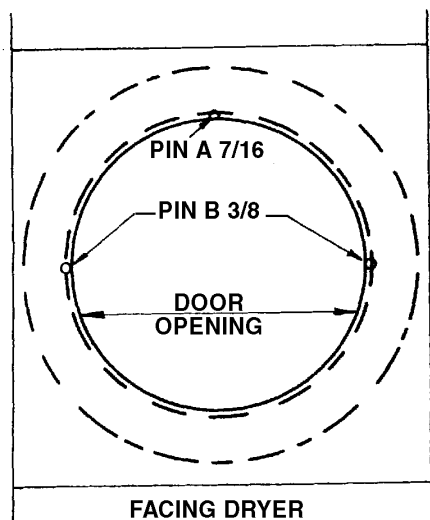
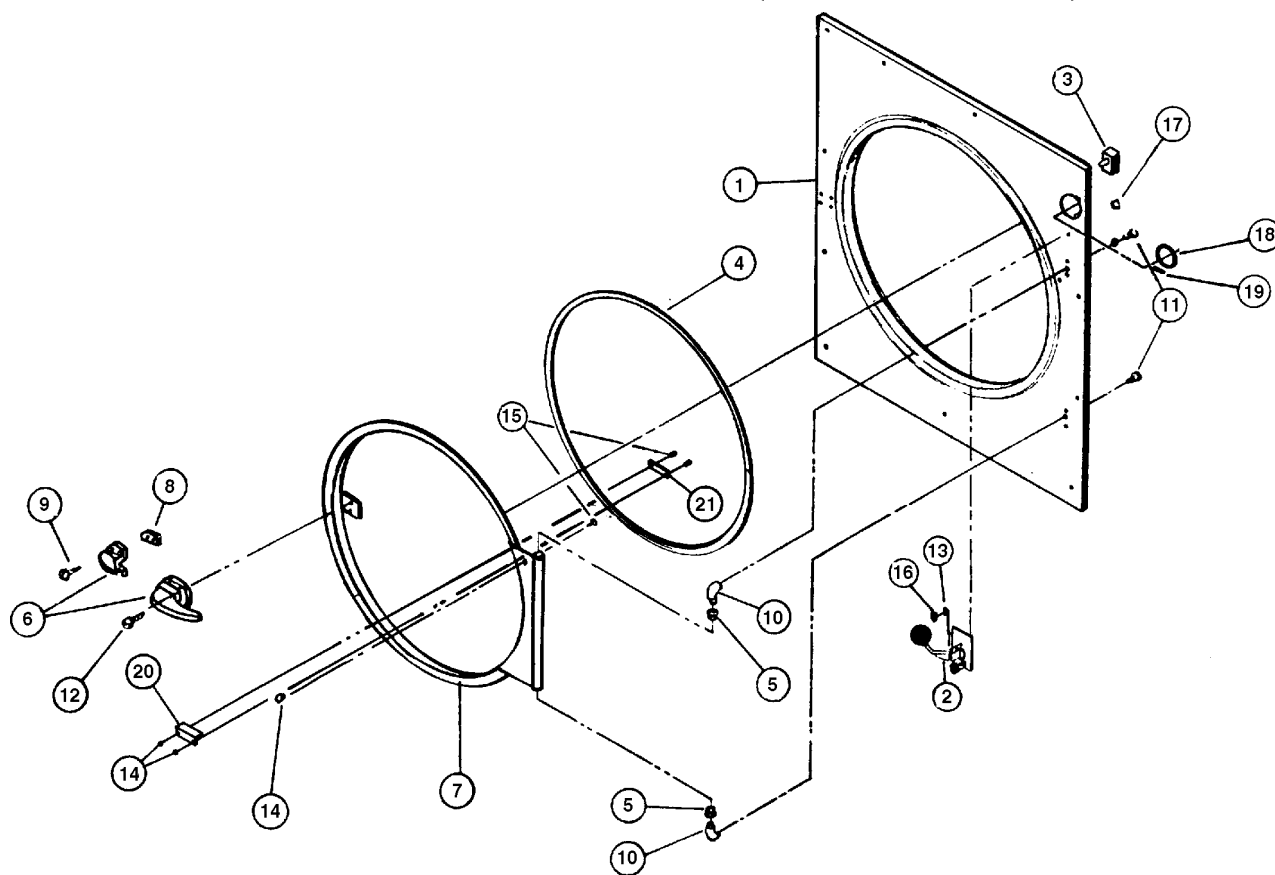


FIG. 2

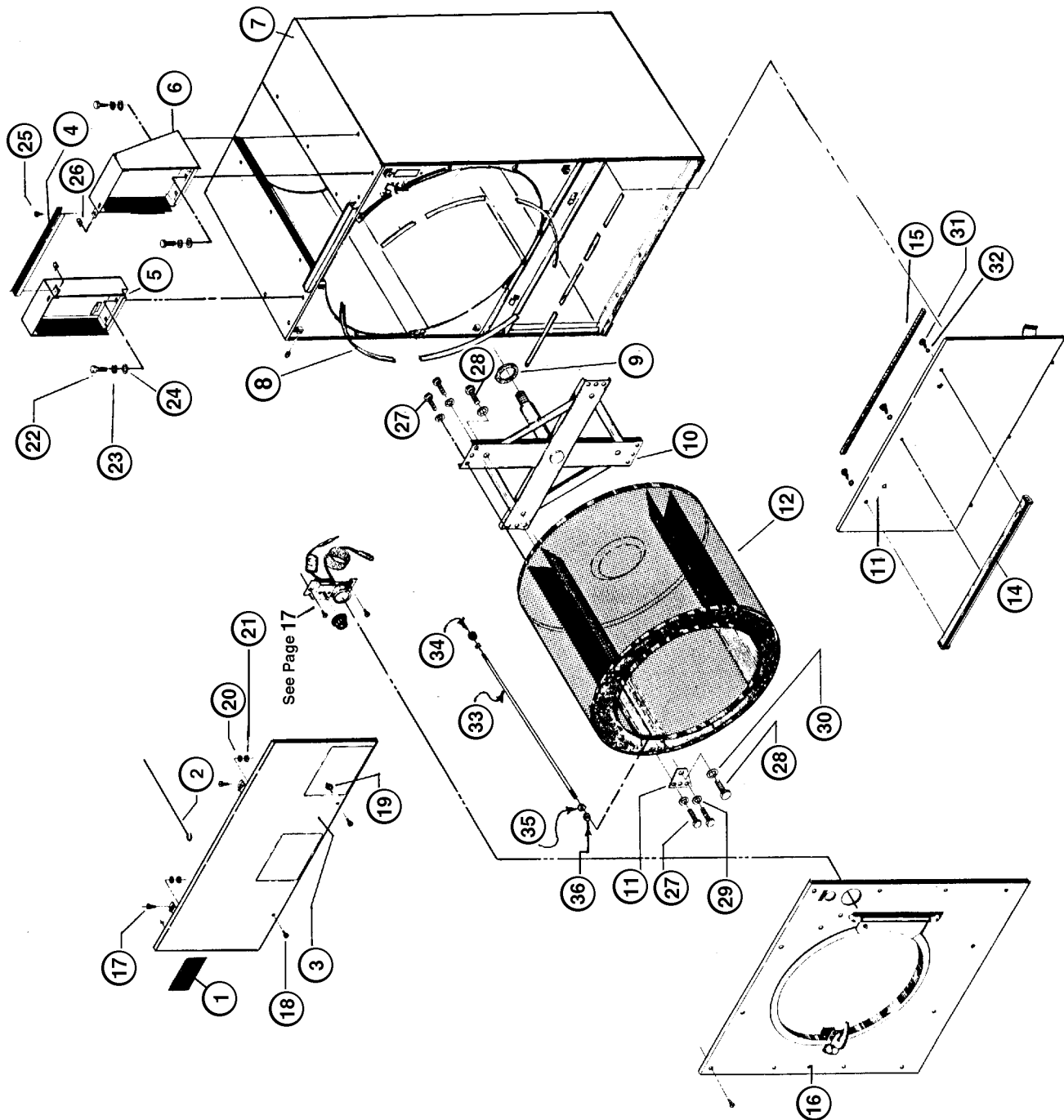
NOTE: USE SHORT SECTIONS OF ROUND STEEL ROD FOR PINS OR DRILL BITS MAY BE USED IN PLACE OF ROUND ROD.

## FRONT PANEL ASSEMBLY (ILLUSTRATION)



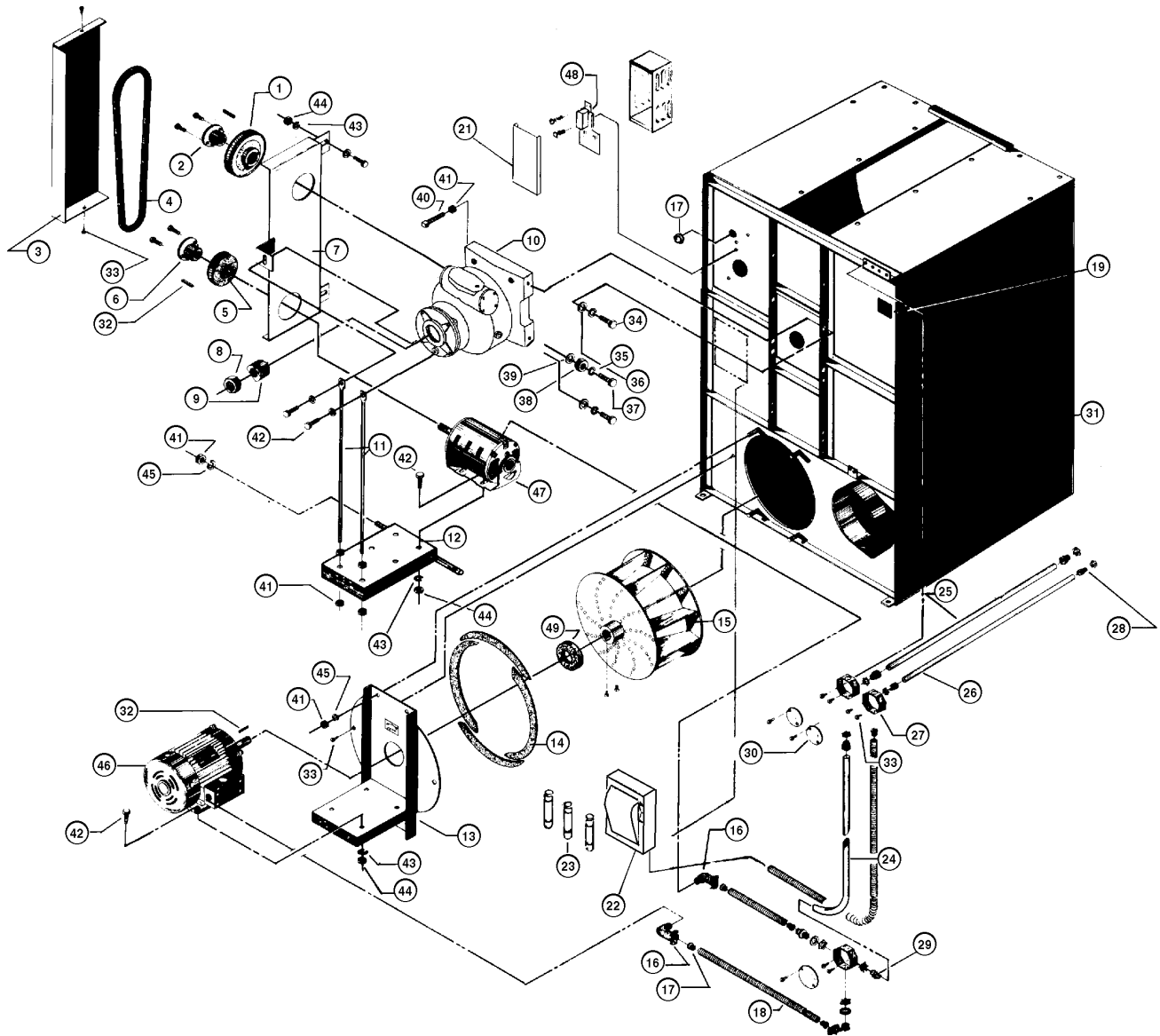
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
1	TU13153	Insulated Front Panel	1
2	TU11943	Right Hand Latch Assembly	1
3	FG140	Door Switch	1
4	TU5288	Basket Door Seal	1
5	PIF172	Delrin Bearing	2
6	TUA2319	Door Latch & Keeper	1
7	TU11630	Right Hand Door w/Insulation	1
8	TU5503	Door Latch Spacer	1
9	TU2687	#8 Screw w/Washer	4
10	TU2236	Hinge Posts	2
11	TU2836	5/16" - 18 x 1/2" Hex Cap Screw	2
12	TU2686	#8 - 32 x 3/8" Ph. Hd. Screw	4
13	F554	#8 Cut Washer	4
14	TU4840	Crown Nut	3
15	TU4839	10 - 32 Screw	3
16	AT383	8 - 32 x 1/2" Screw	4
17	TU10193	Bushing	1
18	TU2641	Thermometer Gasket	1
19	TU5458	Thermometer Sticker	1
20	TU11931	CAM for Open Door Latch	1
21	TU11791	Wear Plate	1

## FRONT QUARTER PARTS (ILLUSTRATION)



## FRONT QUARTER PARTS

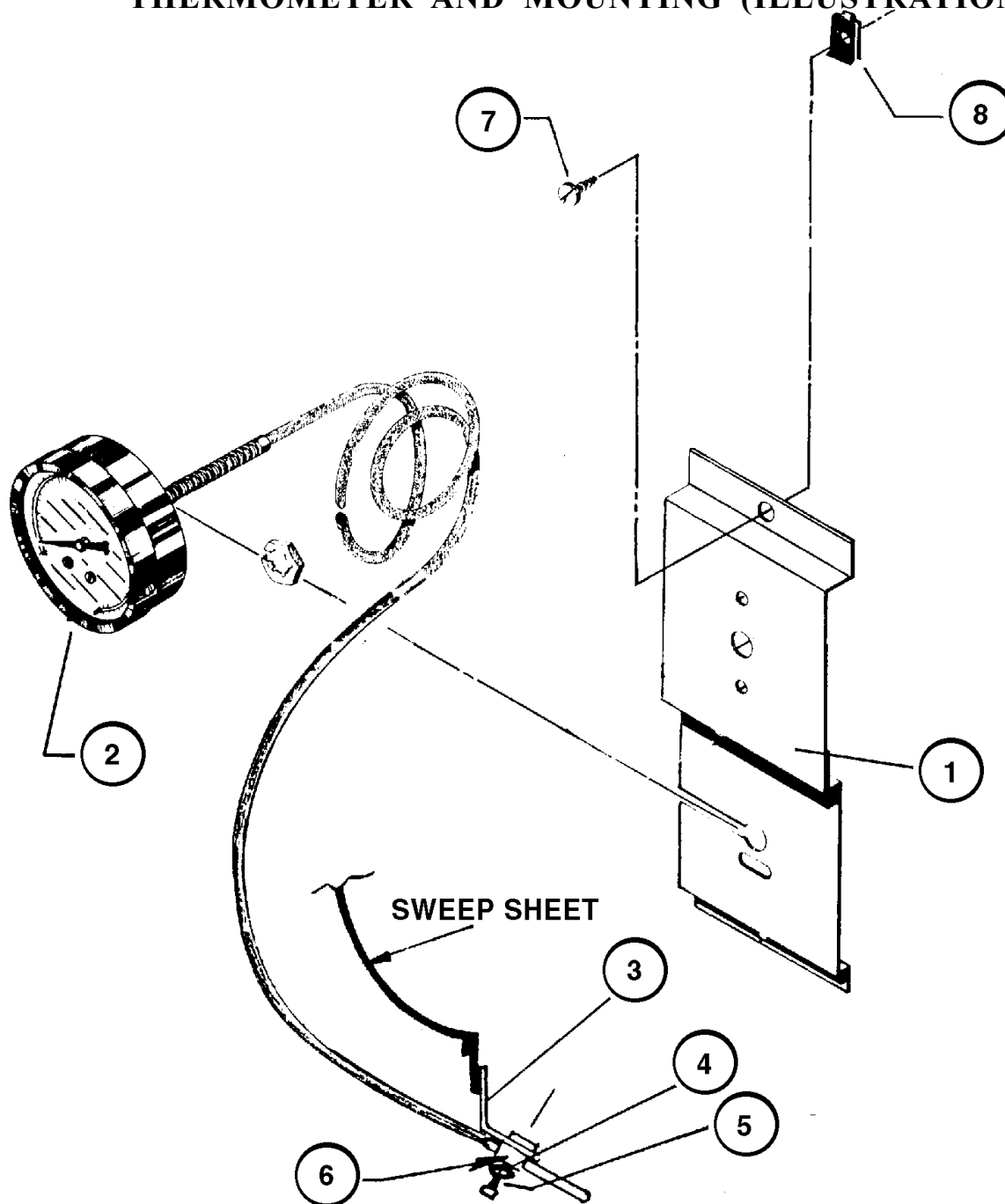
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU8013	Cissell Nameplate
2	TU5739	Support Arm
3	TU8097	Access Door
4	TU5674	Control Box Top Channel Brace
5	TU7159	Left Hand Control Box Weldment
6	TU9866	Right Hand Control Box Weldment
7	TU13144	Jacket
8	TU5302	Sweep Sheet Gasket Set
9	TU5290	Felt Seal
10	TU5295	Spider Assembly
11	TU5397	Outside Rib Plate
12	TU6469	Basket Welded Assembly
13	TU6534	Lint Door Assembly Plate
14	TU7473	Door Handle
15	TU2851	Sponge Gasket
16	TU11630	Front Panel & Door Assembly
17	TU3479	#10 - 32 x 7/16" Screw (Pkg of 6)
18	FG343	Screw Fastener
19	FG345	Retaining Washer
20	P104	1/4" Cut Washer (Pkg of 12)
21	TU2842	#10 - 32 Hex. Nut (Pkg of 12)
22	TU4936	3/8" - 16 x 3/4" Bolt (Pkg of 6)
23	VSB134	3/8" Lock Washer (Pkg of 12)
24	IB140	3/8" Cut Washer (Pkg of 12)
25	TU2793	#8 x 5/8" S.M.S.
26	LB74	#14 Speed Nut (Pkg of 6)
27	TU2662	1/2" - 20 x 1-1/2" Cap Screw (Pkg of 6)
28	TU2664	5/8" - 18 x 1-1/2" Cap Screw (Pkg of 6)
29	OP251	1/2" Internal Tooth Lockwasher (Pkg of 12)
30	TU5801	5/8" Internal Tooth Lockwasher (Pkg of 6)
31	F557	#10 - 24 x 3/8" Screw (Pkg of 12)
32	FB187	#10 Lockwasher (Pkg of 12)
33	TU5911	Basket Rod
34	TU2881	5/8" - 18 Hex Nut
35	TU3418	5/8" Lockwasher
36	AT215	5/8" - 18 x 3/8" Thick Hex Nut

**REAR QUARTER PARTS (ILLUSTRATION)**

## REAR QUARTER PARTS

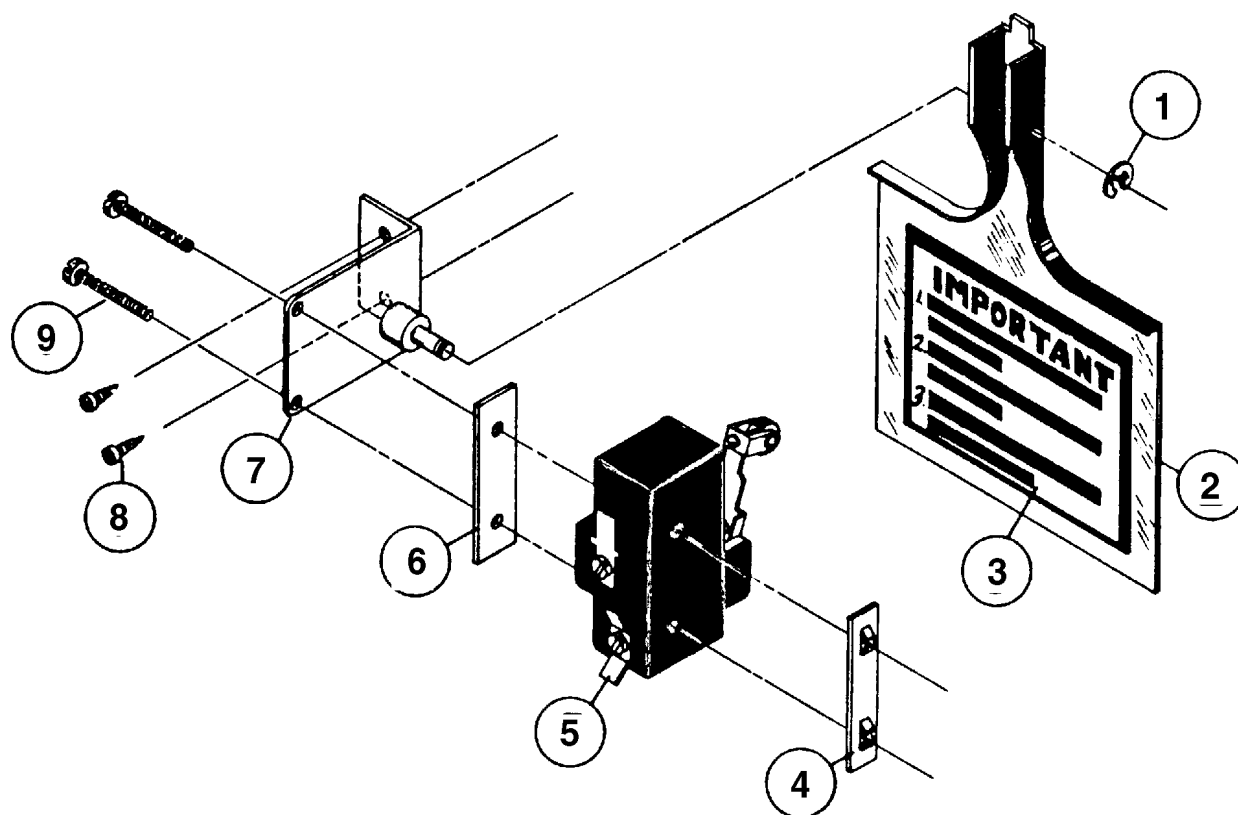
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU3806	Gear Sheave
2	TU3807	Sheave Bushing
3	TU5668	Outside Belt Guard
4	TU2363	V-Belt
5	TU2832	Motor Sheave
6	TU2833	Sheave Bushing
7	TU5672	Belt Guard Welded Assembly
8	TU470	Large Hex Nut
9	TU463	Shaft Nut
10	TM200	Gear Reducer (See Separate Page)
11	TU5328	Belt Adjusting Rod
12	TU4626	Basket Motor Mount Assembly
13	TU5658	Motor & Fan Mount Weldment
14	TU2473	Self-Sticking Gaskets
15	TU403	Fan Wheel
16	TU4739	90° Angle Connector
17	TU2372	Bushing
18	50-4641-292	Cable (Specify 1/2" x 28")
19	TU2887	Nameplate - Serial No. & Model
20	TU2423	Air Switch Assembly
21	TUT176B	Air Switch Cover Right
22	TU11206	Disconnect - 30 Amp
23	TU819907	Fuse 600V, 7 Amp (3 Required)
24	TU6026	Top Motor Conduit
25	TU6027	Back Motor Conduit
26	TU6028	Power Lead Conduit
27	SB35	Junction Box
28	TU5002	1/2" Straight Conn.
29	TU6032	3/4" Straight Conn.
30	TU2335	Junction Box Cover
31	TU13144	Welded Jacket
32	TU4684	Key
33	M263	#8 x 3/8" S.M.S. (Pkg. of 12)
34	RC347	1/2" - 13 x 1-1/4" Hex Hd. Cap Scr. (Pkg. of 6)
35	TU2831	1/2" Split Lockwasher (Pkg. of 12)
36	TU1851	1/2" Flat Washer (Pkg. of 6)
37	TU2195	1/2" - 13 x 1-3/4" Hex Hd. Cap Scr. (Pkg. of 6)
38	TU455	Cam Adjustment Nut
39	TU3575	Internal Tooth Lockwasher (Pkg. of 6)
40	TU5312	3/8" - 16 x 3" Sq. Hd. Set Screw (Pkg. of 6)
41	TU4787	3/8" - 16 Hex Nut (Pkg. of 6)
42	V50	5/16" - 24 x 1" Hx. Hd. Cap Screw (Pkg. of 6)
43	TU2814	5/16" Split Lockwasher (Pkg. of 12)
44	V56	5/16" - 24 Hex Nut (Pkg. of 6)
45	VSB134	3/8" Split Lockwasher (Pkg. of 12)
46	MTR215	Fan Motor
47	MTR212	Basket Motor
48	TU8206	Air Switch
49	TU108	Gasket

# THERMOMETER AND MOUNTING (ILLUSTRATION)



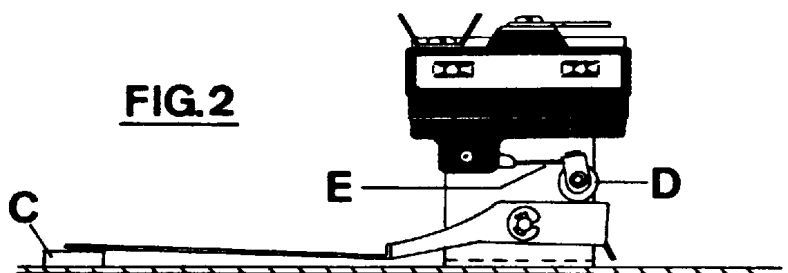
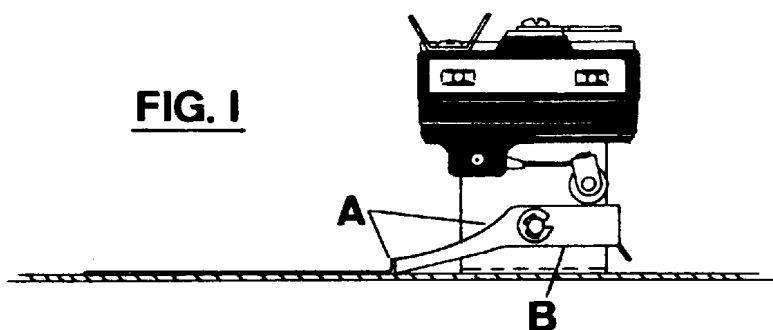
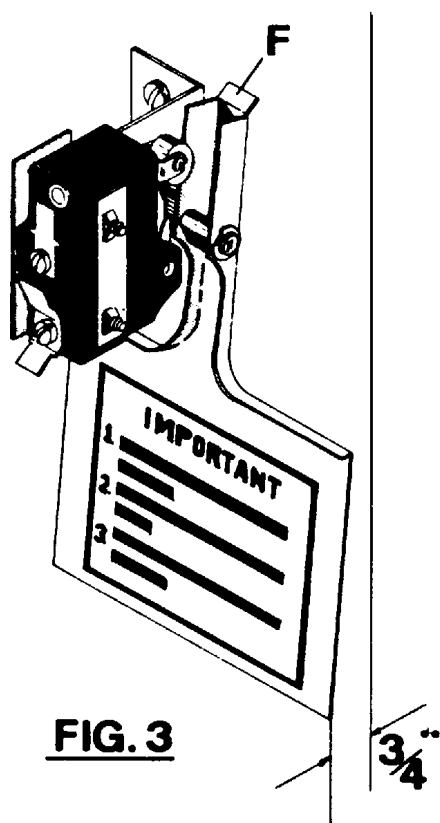
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU6581	Mounting Bracket
2	TU3593	Thermometer
3	TU10527	Bulb Mounting Bracket
4	FB187	#8 Lockwasher
5	M262	#8 - 32 x 3/8" Truss Hd. Scr.
6	C257	Clamp
7	TU3209	#14 x 5/8" S.M.S. (Pkg. of 6)
8	LB74	#14 Tinnerman Clip (Pkg. of 6)

# AIR SWITCH ASSEMBLY - TU8206



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	F888	"E" Ring
2	TU2463	Actuator Arm
3	TU3476	Air Switch Decal
4	TU1771	#6 Tinnerman Nut
5	TU8155	Air Switch
6	TU1770	Insulator
7	TU8171	Air Switch Bracket
8	TU7733	#8 - 18 x 1/2" Self-Drilling Screw
9	TU3219	#6 x 1" Round Head S.M.S.

## AIR SWITCH ADJUSTMENT



1. Shut off current; disconnect leads and remove air switch.
2. Lay air switch assembly on flat surface. Adjust air blade at "A" (Fig. 1) so that air blade lays flat and surface "B" is parallel to the flat surface.
3. Place 3/8" x 5/8" spacer bar or equivalent "C" (Fig. 2) under air blade in position shown; hold switch mounting bracket firmly and adjust switch actuator "D" with needle nose pliers at "E" by twisting actuator right or left whichever is needed so that switch closes when end of air blade engages bar "C".
4. Maximum opening of air switch must be no greater than 3/4" (Fig. 3). Bend tab "F" in or out to maintain this dimension.
5. Re-install air switch assembly on rear of dryer.
6. Re-check operation of air blade. Switch must close before air blade engages face of opening and re-open before stop "F" engages.

**MOTORS****BASKET MOTOR**

CISSELL PART # : MTR212

GENERAL ELECTRIC PART # : 5K43MG5991D

440V, 1 HP, 60 HZ, 3 PH, 1725 RPM.  
56 FR, 1.9 A, SFA = 2.1, SF = 1.15, AMB = 60 C.

ALTERNATE:

EMERSON PART # : P63BZS3106

440V, 1 HP, 60 HZ, 3 PH, 1725 RPM.  
56 FR, 2.1 A, SFA = 2.5, SF = 1.15, AMB = 60 C.

**FAN MOTOR**

CISSELL PART # : MTR215

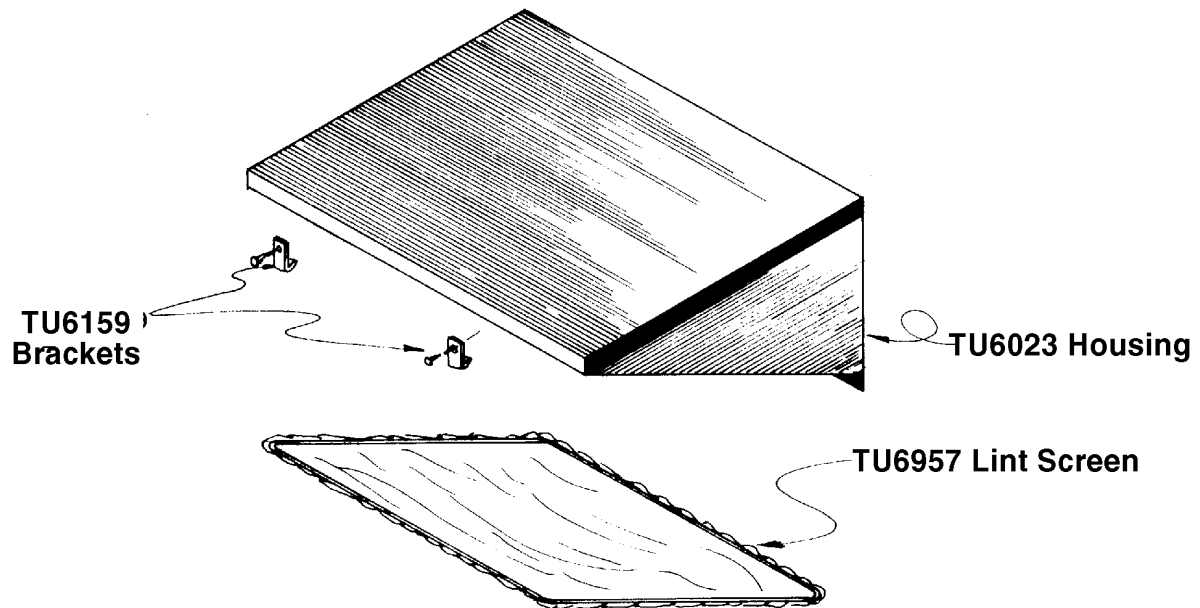
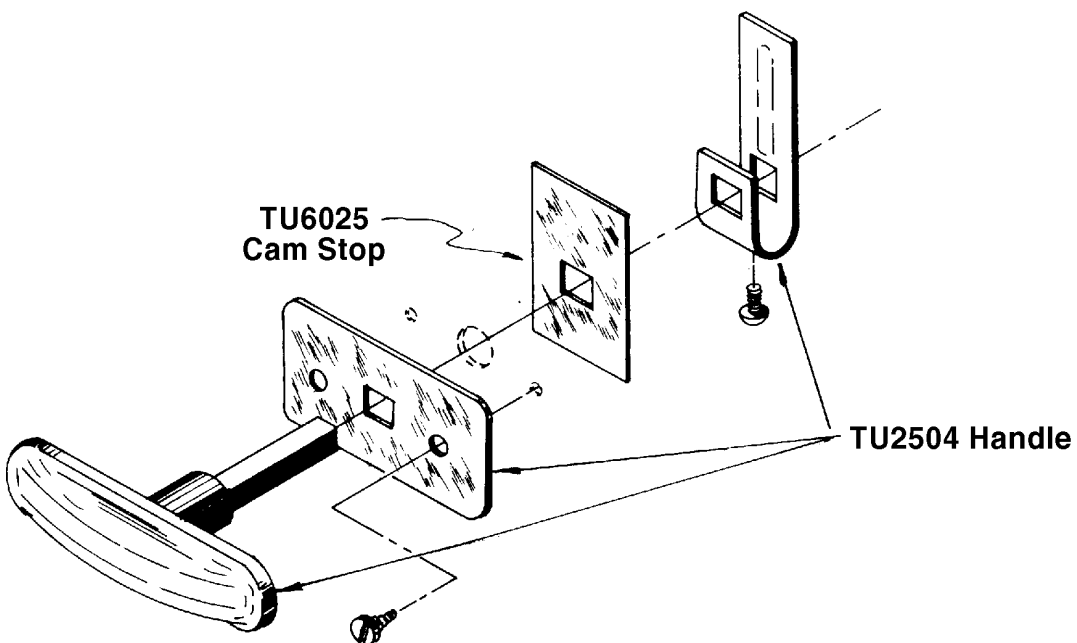
GENERAL ELECTRIC PART # : 5K45PG8031

440V, 1-1/2 HP, 60 HZ, 3 PH, 1725 RPM.  
145T FR, 2.8 A, SFA = 2.9, SF = 1.15, AMB = 40 C.

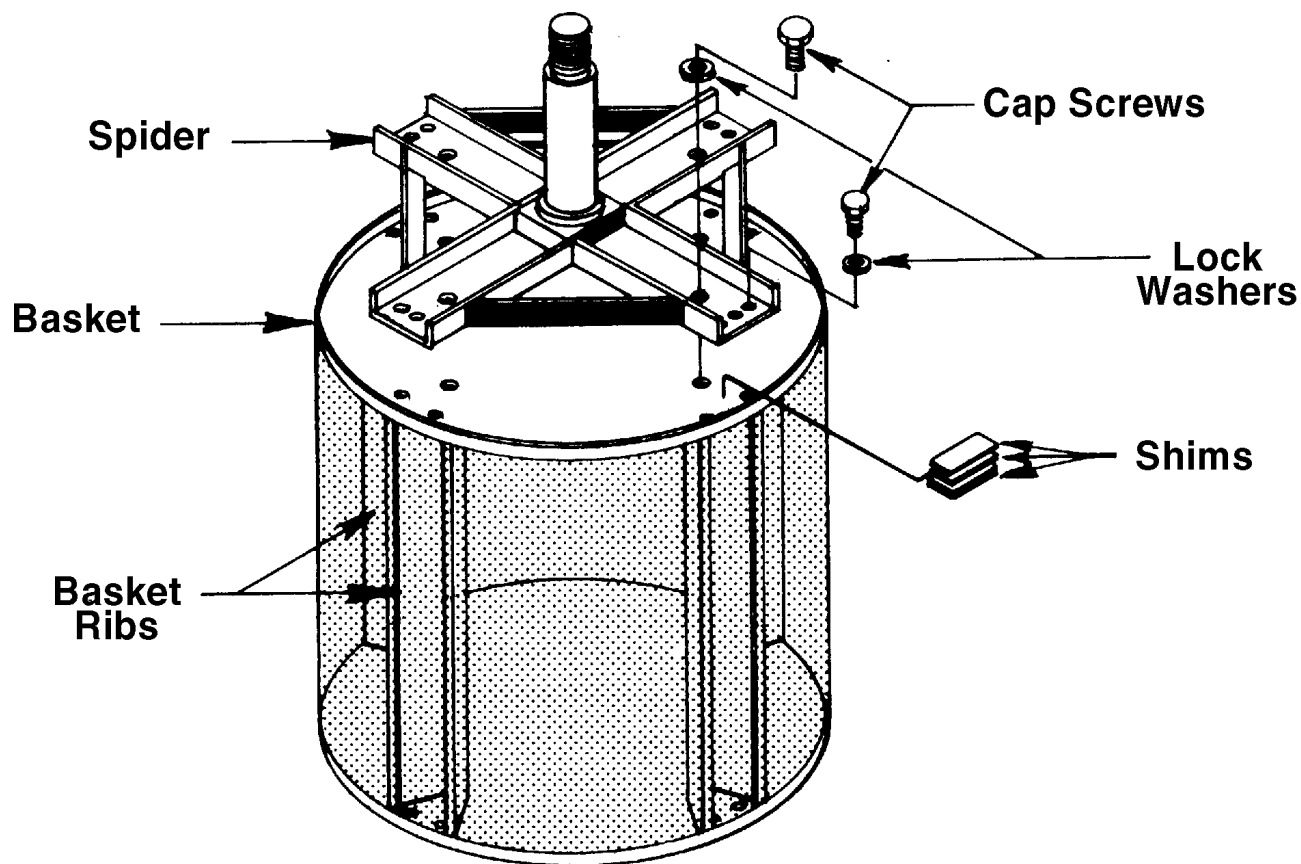
ALTERNATE:

EMERSON PART # : P63BZT3104

440V, 1-1/2 HP, 60 HZ, 3 PH, 1725 RPM.  
145T FR, 2.4 A, SFA = 2.6, SF = 1.15, AMB = 40 C.

**SELF-CLEANING LINT TRAP****LINT TRAP DOOR LOCK**

## SHIMMING THE BASKET AND SPIDER ASSEMBLY

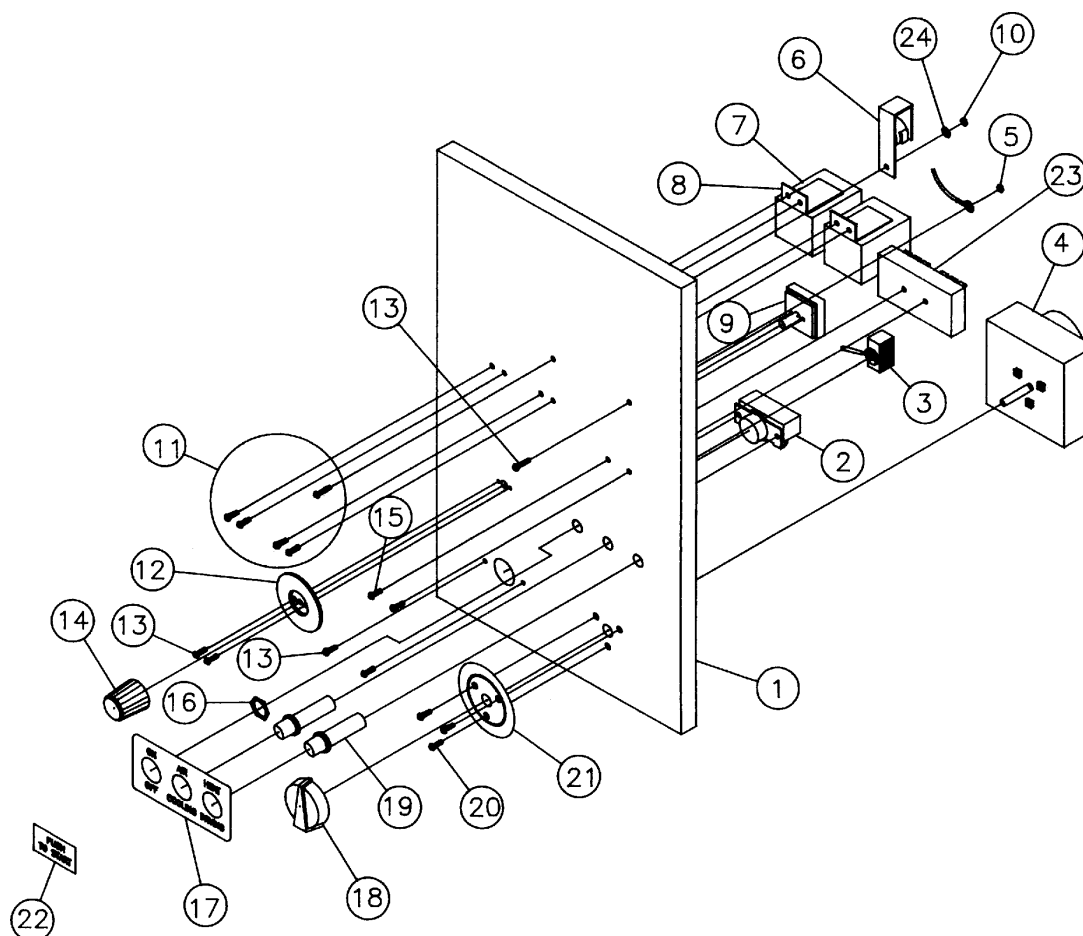


This procedure is normally necessary when replacing either the basket or the spider assembly on any Cissell tumbler. The alignment of these two parts are crucial in assuring a true running basket.

- A. Align the basket as per instructions in the manual. (See page 26)
- B. Rotate the basket to determine where the most out of round point is (where the basket scrapes or comes closest to scraping the sweep sheet).
- C. Mark this position and the nearest rib to this position.
- D. Remove the basket (do not loosen the alignment bolts).
- E. With the basket on the floor (spider up), place one or two shims between the spider leg and the back of the basket at the marked rib position. (See drawing).
- F. Re-insert spider and basket assembly and re-check cylinder.
- G. If at this point, basket is still out of round, procedure must be repeated starting with step "B".
- H. Upon completion of the shimming process, re-alignment of basket is necessary.

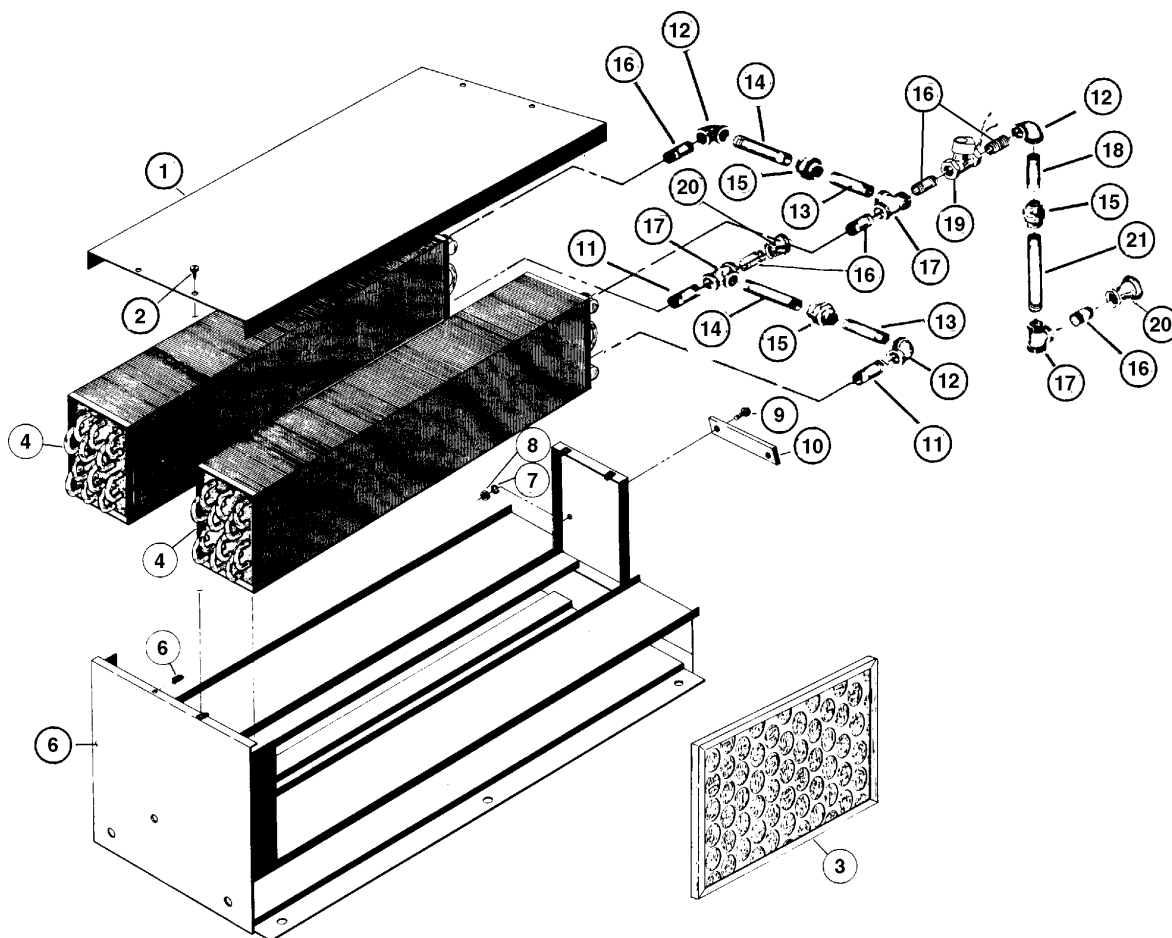
NOTE: If the point mentioned in Step #B is between two ribs, both ribs might have to be shimmed.

## CONTROL PANEL ASSEMBLY



<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU13148	Control Panel Plate
2	PT111	Push-to-Start Switch
3	FG147	Toggle Switch
4	TU6109	Timer, 0-60 Min., 110V
5	TU3400	#6 - 32 Hex. Nut
6	TTU101	Buzzer 110V
7	TU8599	Relay
8	TU8709	Relay Bracket
9	TU3159	Switch, Hi-Low
10	TU3266	#8 - 32 Hex. Nut
11	SV332	#8 - 32 x 3/8" Rd. Hd. Screw
12	TU3198	Dial, Hi-Low
13	ET208	#6 - 32 x 1/4" Binding Hd.
14	TU3164	Knob, Temperature
15	RC3851	#6 - 32 x 3/4" Rd. Hd. Screw
16	TU3805	15/32 - 32 Lock Nut
17	TU8418	On-Off Label
18	TU2555	Knob, Timer
19	TU5421	Neon Lamp 110V
20	TU7733	#8 - 18 x 1/2" Self-Drill Screw
21	TU5444	Timer Dial
22	TU10603	Nameplate, Push-to-Start
23	TU9343	Terminal Block
24	M271	#8 Internal Tooth Lockwasher

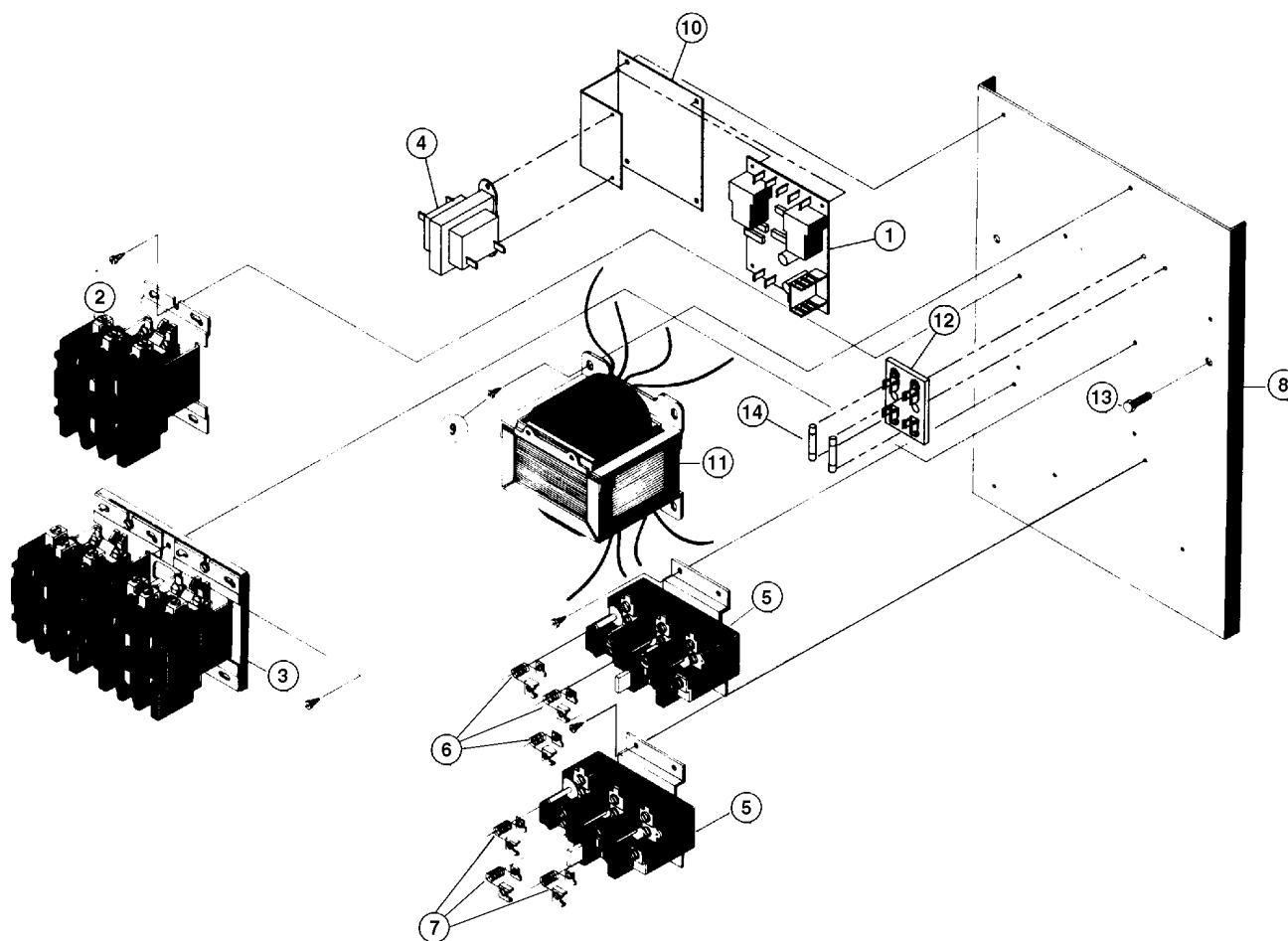
## 4-COIL LAUNDRY STEAM BONNET



TU13160 4-Coil Laundry Complete Bonnet with 120 V. Solenoid Valve and without Static Steamer

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU7393	Top Plate
2	TU3209	#14 x 5/8" Sht. Mtl. Screw
3	TU6458	Air filter (4 req'd)
4	TU1699	Steam Coil (4 Coil)
5	LB74	#14 Speed Nut
6	TU8082	Bonnet Weldment
7	TU2846	1/4" Lockwasher
8	TU4934	1/4" - 20 x 7/16" Hex Nut
9	FB189	1/4" - 20 x 1" Hex Hd. Screw
10	TU5726	Rear Coil Holder
11	TU5914	3/4" x 3-1/2" Lg. Pipe
12	TU4605	3/4" Elbow
13	TU4620	3/4" x 4-1/2" Lg. Pipe
14	TU4610	3/4" x 5" Lg. Pipe
15	TU4600	3/4" Union
16	TU4608	3/4" x 2" Lg. Pipe
17	TU4597	3/4" Tee
18	TU4601	3/4" x 3" Lg. Pipe
19	TU6041	Solenoid Valve
20	TU2735	1" x 3/4" Reducer
21	TU4598	3/4" x 6" Lg. Pipe

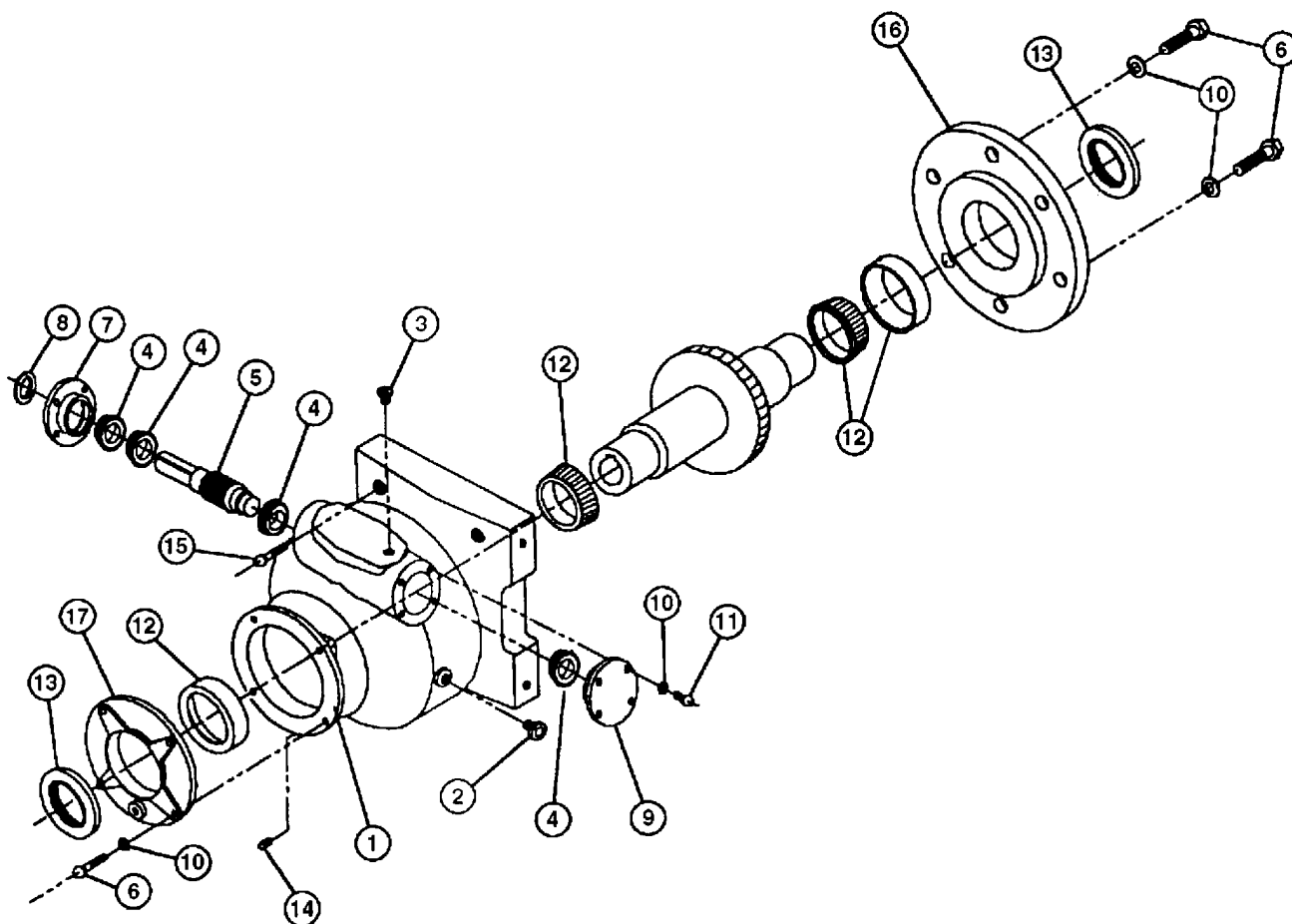
## REVERSING CONTROL PANEL ASSEMBLY



TU13158    Reversing Control Panel Assembly 440/60/3, w/110V Controls

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
1	TU12874	Electronic Reversing Timer (Non-adjustable)
2	TU6965	Magnetic Contractor 120V 50, 60 Cy.
3	TU7252	Magnetic Contractor 120V 50, 60 Cy.
4	TU12989	Transformer
5	TU6774	Overload Unit (2 req'd)
6	TU267921	Overload Heater (Fan) (3 req'd)
7	TU267914	Overload Heater (Basket) (3 req'd)
8	TU6959	Panel Plate
9	TU7733	#8 - 1/2" Self-Drill Screw
10	TU13126	Transformer Mounting Bracket
11	TU4660	Transformer
12	TU10596	Fuse Holder
13	RC344	1/4" - 20 x 3/4" Hex. Head Screw
14	TU10599	Fuse - 1 amp (2 req'd)

## PARTS—TM200—LARGE GEAR REDUCER WITH BRONZE TEETH

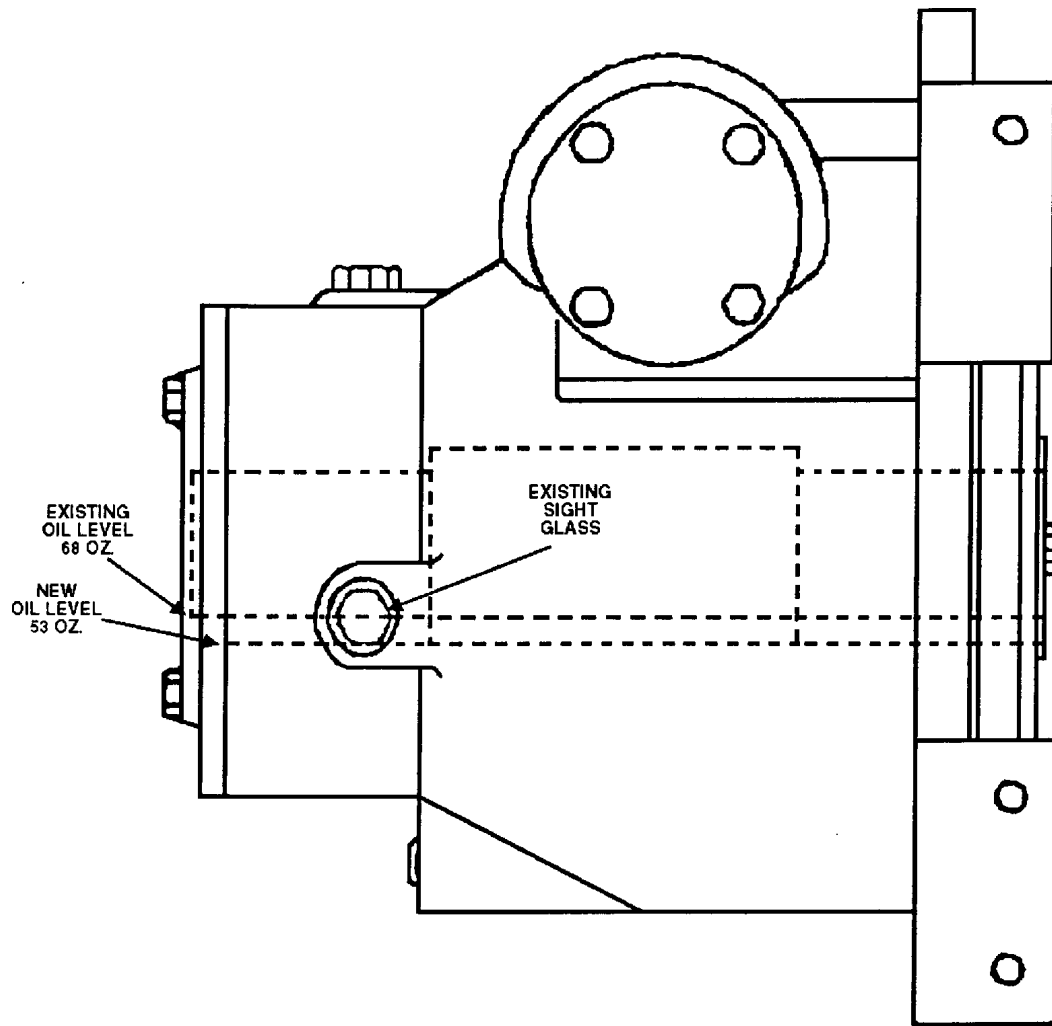


1	TM203	Housing	10	VSB134	3/8" Split Lockwasher (Pkg. of 6)
2	K474	Oil Level Plug Kit	11	TU3246	3/8" - 16 x 1" Cap Screw (Pkg. of 6)
3	TM119	1/4" Vent Plug	12	TM217	Large Bearing Cone & Cup
4	TM208	Small Bearing Cone & Cup	13	TM220	Large Klosure
5	TM225	Worm & Worm Gear	14	TM221	1/4" Pipe Plug
6	IB139	3/8" - 16 x 1 1/4" Cap Screw	15	TU5312	3/8" x 3" Set Screw
7	TM205	Small Open End Cap	16	TM211	Large End Cap 10 1/2 Dia.
8	TM204	Small Klosure	17	TM212	Small End Cap 6 3/4 Dia.
9	TM218	Small Closed End Cap			

TM225 Worm and Worm Gear Set (for TM200 ONLY) (only sold as set)

Not Illustrated—TU3465 one pint of Cissell Transmission Oil

## GEAR REDUCER OPERATION AND MAINTENANCE



### CHANGING OIL IN GEAR REDUCER

1. Level Gear Reducer as best as possible.
2. Drain oil to bottom of Sight Glass by removing Sight Glass.
3. Replace Sight Glass with a J36 Plug.
4. Use this hole as a fill hole for future oil changes.

Each Gear Reducer is filled with pints of Cissell TU3465 transmission oil before leaving the factory. Change oil once every 6 months.

The Large Roller Bearings, which support the worm gear and basket load, must operate in a preloaded condition, that is the worm gear must not have end play. The Gear Reducer is assembled at the factory to provide a 16 - 20 inch lb. pre-load on these bearings.

The Small Roller Bearings, which carry the worm must operate in a pre-loaded condition, that is, the worm must not have end play. The Gear Reducer is assembled at the factory to provide a 2 - 4 inch lb. pre-load on these bearings.

## REMOVAL AND INSTALLATION OF SEALS ON GEAR REDUCER

### CAUTION

Drain oil **before** removing seals; replace the NEW oil **after** installing new seals (See Cissell Gear Reducer Sheet).

Remove Gear Reducer from rear of dryer **before** removing seals.

### TO REMOVE EXISTING FRONT AND REAR SEALS from front and rear caps on Gear Reducer:

Slip end of screwdriver under seal; using end of Gear Shaft as a fulcrum, force seal out. Repeat operation at several different places until seals are removed from gear shaft.

### TO REMOVE EXISTING END SEAL AND END CAP from Gear Reducer:

Remove four cap screws and slip end cap and seal from worm gear. Tap seal out of cap from inside. Clean inside of front, rear, and end caps. Spread permatex evenly over area to receive seal. Clean outside end of large and small gear shafts. Spread vasoline evenly over area to receive seal. Spread permatex evenly over outside rim area of seal. Spread vasoline evenly over inside rim area of seal.

### TO INSTALL NEW FRONT AND REAR SEALS:

Hold front (and rear) seal tightly in place over gear shaft with rubber seal in. Run edge of thin, dull instrument (such as wooded spatula) carefully around rubber wiping edge of seal and chamfer end of gear shaft so that seal is evenly installed all around gear shaft. DO NOT INJURE RUBBER WIPING EDGE.

### TO INSTALL NEW END SEAL:

Slip seal in end cap. Hold cap and seal tightly in place over small shaft with rubber seal in. Run edge of wooden spatula carefully around rubber wiping edge of end seal and chamfer end of small shaft so that seal is evenly installed all around edge of shaft. DO NOT INJURE RUBBER WIPING EDGE.

### AFTER SEALS ARE EVENLY INSTALLED ALL AROUND EDGES OF SHAFTS:

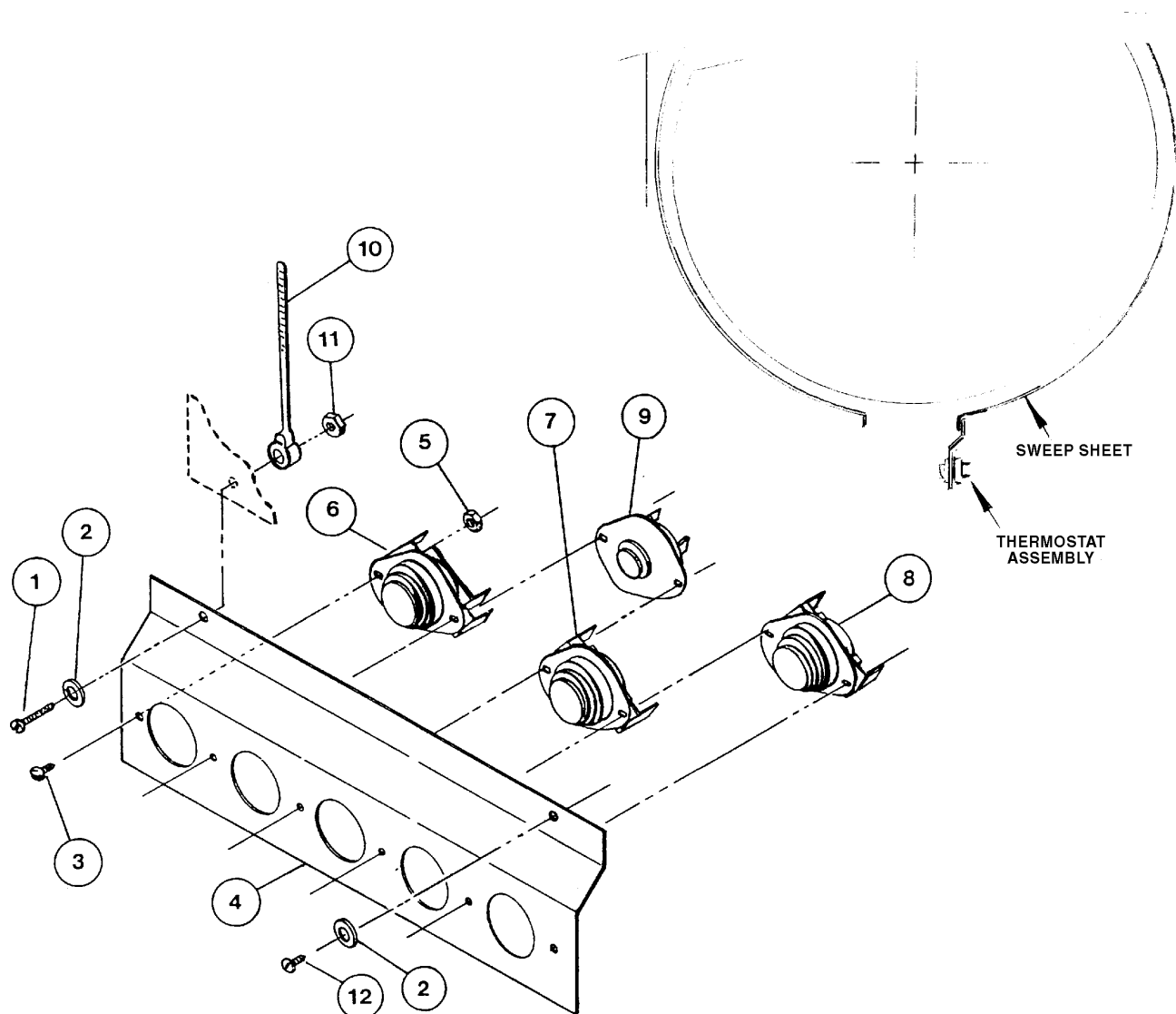
Place block of wood over front and rear seals and tap all around with a plastic faced mallet, until seal is flush into recess of front (or rear) cap.

Slip end seal and cap into position and tighten four bolts; then with a block of wood over end seal, gently tap with plastic faced mallet, until seal is flush into recess of end cap.

### REINSTALL GEAR REDUCER ON REAR OF DRYER

### IMPORTANT

While the sealing element or packing ring in a seal is not fragile, care must be taken to prevent damage to the wiping edge during mounting. Do not apply pressure to, nor hammer directly on, the sealing ring or spring; make sure that all mounting tools contact only the metal case of the seal.

**THERMOSTAT ASSEMBLY - TU13167**

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Quantity</u>
1	601367512	#8 - 32 x 1" Truss Hd. Screw	1
2	M270	Washer	2
3	TU3624	#6 - 32 x 1/4" Screw	5
4	TU5143	Mounting Bracket	1
5	TU3400	#6 - 32 Hex Nut	5
6	TU2045	Cool-Down Thermostat	1
7	TU3240	Thermostat - High Heat	1
8	TU5150	Thermostat - Low Heat	1
9	TU11199	Safety Thermostat Assembly	1
10	FG148	Clamp	1
11	TU3266	#8 - 32 Hex Nut	1
12	M262	#8 - 32 x 3/8" Truss Hd. Screw	1

## TROUBLESHOOTING CHART

TROUBLE	CAUSE	REMEDY
Dryer runs, steam passing through coil, dryer doesn't heat.	Inadequate venting Inadequate makeup air Lint trap blocked Coil filter dirty Coil fins clogged with lint.	Proper operation of steam dryers depends on air flow through the coils. Venting must be done with the least possible restriction. Make-up air opening of at least 350 sq. inches free area must be available in the vicinity of the dryer to replace the air being exhausted by the dryer. Lint traps must be kept clean. Air filters placed over the coil must be kept clean. Coil fins must be kept clean.
	Steam supply & return	Must be properly installed and adequately sized. See piping installation sheet.
Tumbler Noisy or Vibrating	Fan out of balance.	Accidental damage to the fan blade can change the dynamic balance. Damaged fans should be replaced.
	Basket rubbing V-Belt sheaves	Adjust basket clearances. Tighten set screws. Make sure sheaves are in proper alignment.
	Belt	Adjust belt tension.
	Foreign objects	Occasionally screws, nails, etc. will hang in the basket perforations and drag against the sweep sheets surrounding the basket. Such foreign objects should be removed immediately.
Basket does not reverse	Reversing timer	Check timer to see if it is operating.
Basket reverses too fast or slow	Reversing timer	Adjust timer.
Dryer runs but no heat	Air switch not operating	Clean out lint compartment daily. Check back draft damper for foreign object, lint accumulation or anything that may prevent the damper from opening. Check duct work for lint build up. Check exhaust outlet.
	Air switch out of adjustment.	See air switch adjustment sheet in service manual.
	Air switch defective	Replace air switch.
No steam to steam bonnet	Trap installed incorrectly	Check trap for inlet and outlet markings. Install trap according to markings.
	Supply line valve closed	Open valves in supply and in the return lines.
	Check valve installed incorrectly	Check for inlet and outlet marking on check valve, and invert if necessary.
	Strainer clogged	Remove plug and blow down strainer or remove and clean thoroughly if heavily clogged.

## TROUBLESHOOTING CHART

<b>TROUBLE</b>	<b>CAUSE</b>	<b>REMEDY</b>
Water in steam line	Steam piping installed incorrectly	Check piping per steam installation instructions.
	Trap not functioning	Check trap for size and capacity. If dirty and sluggish - clean thoroughly or replace. Check return line for high back pressure, or another trap charging against the trap functioning improperly.
Motors won't start	No power	Check fuses on circuit breakers, make sure main control switch is on.
	Incorrect current	Check power source. Voltage, phase and frequency must be the same as specified on electrical rating plate.
	Time off Overload relays tripped	Turn timer clockwise to desired time setting. Push reset buttons on control box in to reset.
	Loose wiring connections	Check wiring.
	Defective starting relay	Check coils and contacts.
Fan motor only runs	Loading door open	Close door.
	Door switch out of adjustment	Adjust switch by removing cover and blending actuator lever to clear switch button 3/8" with cover in place.
	Defective door switch	Replace switch.
	Reversing timer	Check timer to see if it is operating.
Dryer runs no steam to coils	Valves closed	Check all valves in steam supply & return to make sure they are open.
	Steam trap blocked	Remove and clean. Replace if defective.
	Solenoid valve	On dryers using solenoid temperature control, check operation of solenoid valve by advancing thermostat.
	Thermostat	On dryers using solenoid temperature control, thermostat controls operation of steam valve. If defective, replace thermostat.

TWL1691

The diagram illustrates the electrical wiring for a motor control system. Key components and their connections include:

- Power Source:** 440/60/3 supply connected to a **FUSES** block.
- Disconnect Box:** Receives power from the fuses and distributes it to the **PLUG** and the **FAN MOTOR**.
- Transformers:**
  - Transformer 1:** 120V LINE to 24V LOAD, connected to the **ELECTRONIC REVERSING CONTROL**.
  - Transformer 2:** 120V SECONDARY to 440V PRIMARY, connected to the **FUSES** and the **BASKET CONTACTORS AND OVERLOAD RELAY**.
- Electronic Reversing Control:** Features **REV. INPUTS** and **24VAC INPUTS**, connected to the **PLUG** and the **FAN CONTACTOR AND OVERLOAD RELAY**.
- Motor Control:**
  - FAN MOTOR:** Connected to the **FAN CONTACTOR AND OVERLOAD RELAY**.
  - BASKET MOTOR:** Connected to the **BASKET CONTACTORS AND OVERLOAD RELAY**.
- Wiring Labels:** Various color-coded wires (BK, WH, RD, OR, BL, BN) and line labels (L1, L2, L3) are used throughout the diagram to identify specific circuits and components.
- Timer Control Panel:** A connection labeled **TO TIMER CONTROL PANEL** is shown at the bottom right.

## TWL1692

L44CD42MS  
TIMER CONTROL PANEL  
440/60/3 WITH 120/60/1 CONTROLS



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**COMMON COMMERCIAL PARTS**

<b>LOCATION</b>	<b>PART NUMBER</b>	<b>PART NAME</b>
Page 27	TU2687	#8 Phillips Head Screw
“	TU2836	5/16” - 18 x 1/2” Hex Cap Screw
“	TU2686	8 - 32 x 1/2” Ph. Head Screw
“	F554	#8 Cut Washer
“	TU4840	10 - 32 Crown Nut
“	TU4839	10 - 32 Screw
“	AT383	8 - 32 x 1/2” Screw
Page 29	TU3479	10 - 32 x 7/16” Screw
“	P104	1/4” Cut Washer
“	TU2842	10 - 32 Hex Nut
“	TU4936	3/8” - 16 x 3/4” Bolt
“	VSB134	3/8” Lock Washer
“	IB140	3/8” Cut Washer
“	TU2793	#8 x 5/8” Sheet Metal Screw
“	LB74	#14 Speed Nut (Tinnerman)
“	TU2662	1/2” - 20 x 1-1/2” Cap Screw
“	TU2664	5/8” - 18 x 1-1/2” Cap Screw
“	OP251	1/2” Int. Tooth Lock Washer
“	TU5801	5/8” Int. Tooth Lock Washer
“	F557	10 - 24 x 3/8” Screw
“	FB187	#10 Lock Washer
“	TU2881	5/8” - 18 Hex Nut
“	TU3418	5/8” Lock Washer
“	AT215	5/8” - 18 x 3/8” Thick Hex Nut
Page 31	TU819907	Fuse, 600V, 7 Amp, Time Delay, UL Class RK5
“	TU11206	Disconnect Box, 30 Amp
“	M263	#8 x 3/8” Sheet Metal Screw
“	RC347	1/2” - 13 x 1-1/4” Hex Head Cap Screw
“	TU1851	1/2” Split Lock Washer
“	TU2195	1/2” - 13 x 1-3/4” Hex Head Cap Screw
“	TU3575	1/2” Int. Tooth Lock Washer
“	TU5312	3/8” - 16 x 3” Square Head Set Screw
“	TU4787	3/8” - 16 Hex Nut
“	V50	5/16” - 24 x 1” Hex Head Cap Screw
“	TU28145	5/16” Split Lock Washer
“	V56	5/16” - 24 Hex Nut
“	VSB134	3/8” Split Lock Washer
Page 32	FB187	#8 Lock Washer
“	M262	8 - 32 x 3/8” Truss Head Screw
“	TU3209	#14 x 5/8” Sheet Metal Screw
“	LB74	#14 Speed Nut (Tinnerman)

**COMMON COMMERCIAL PARTS**

<b>LOCATION</b>	<b>PART NUMBER</b>	<b>PART NAME</b>
Page 33	TU1771	#6 Speed Nut (Tinnerman)
“	TU7733	8 - 18 x 1/2” Self-Drill Screw
“	TU3219	#6 x 1” Round Head Sheet Metal Screw
Page 38	FG147	6 Amp, 125VAC, SPST Toggle Switch
“	TU3400	6 - 32 Hex Nut
“	TU3266	8 - 32 Hex Nut
“	SV332	8 - 32 x 3/8” Round Head Screw
“	ET208	6 - 32 x 1/4” Binding Head Screw
“	RC3851	6 - 32 x 3/4” Round Head Screw
“	TU3805	15/32” - 32 Lock Nut
“	TU7733	8 - 18 x 1/2” Self-Drill Screw
“	M271	#8 Int. Tooth Lock Washer
Page 39	TU3209	#14 x 5/8” Sheet Metal Screw
“	LB74	#14 Speed Nut (Tinnerman)
“	TU2846	1/4” Split Lock Washer
“	TU4934	1/4” - 20 Hex Nut
“	FB189	1/4” - 20 x 1” Hex Head Screw
“	TU5914	3/4” x 3-1/2” Long Pipe
“	TU4605	3/4” Elbow
“	TU4620	3/4” x 4-1/2” Long Pipe
“	TU4610	3/4” x 5” Long Pipe
“	TU4600	3/4” Union
“	TU4608	3/4” x 2” Long Pipe
“	TU4597	3/4” Tee
“	TU4601	3/4” x 3” Long Pipe
“	TU2735	1” x 3/4” Reducer
Page 40	TU7733	#8 x 1/2” Self-Drill Screw
“	RC344	1/4” - 20 x 3/4 Hex Head Screw
“	TU10599	Fuse, 250 VAC, 3AG, 1 Amp
Page 41	SU30	1/4” Pipe Plug
“	J36	1/2” Pipe Plug
Page 44	601367512	8 - 32 x 1” Truss Head Screw
“	M270	#8 Washer
“	TU3624	6 - 32 x 1/4” Screw
“	TU3400	6 - 32 Hex Nut
“	TU3266	8 - 32 Hex Nut
“	M262	8 - 32 x 3/8” Truss Head Screw